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Document: 830-390/012

FEDERAL-PROVINCIAL CONFERENCE OF MINISTERS AND DEPUTY MINISTERS OF AGRICULTURE

Press Communiqué

REGINA, Saskatchewan
March 1 and 2, 1991

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FEDERAL-PROVINCIAL COMMUNIQUÉ
COMMUNIQUÉ FÉDÉRAL-PROVINCIAL

For Immediate Release

FEDERAL-PROVINCIAL MINISTERS ADVANCE SAFETY NETS FOR AGRICULTURE

REGINA, March 2, 1991 -- Federal and provincial Ministers of Agriculture today approved criteria for third line of defence programs and finalized premium methodology for the recently announced Gross Revenue Insurance Plan (GRIP) for 1991-92.

With these details finalized, governments will be able to offer the program to farmers in time for spring seeding. A committee will further develop these details and examine refinements for future years. Premiums and target revenue for each crop by province will be finalized and made public in the next few days.

The Net Income Stabilization Account (NISA) program will also be available to farmers for the 1990 tax year in participating provinces and further work will continue to introduce NISA in all provinces. The two programs will provide a base for long-term stability and improve significantly the income situation for grains and oilseeds producers.

Ministers received a report from the Third Line of Defence Committee. Because of the extent of the farm income shortfall in 1990 and 1991, and as farmers will not receive the full benefits of GRIP and NISA until 1992, Ministers agreed that interim measures will be required as a bridge to the new safety nets. At the same time, they reinforced the need for long-term adjustments to be addressed through the third line of defence process.

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Ministers emphasized that the third line of defence process enters into play when there are problems that measures like GRIP and crop insurance were not designed to address. Agreement was reached on the principles upon which assistance for eligible commodities should be based (see attached backgrounder). Any transitional assistance in 1991 will be funded by the federal government, but will be conditional upon a commitment by industry and provincial governments to develop complementary initiatives which will enable the industry to adjust over the long-term.

Ministers agreed that producers of edible horticultural crops should be offered the opportunity to participate in GRIP and NISA in as many provinces as possible, beginning in 1991. A committee studying additional approaches for enhancing the long-term income stability of horticultural producers will submit its recommendations to Ministers at their next annual conference in July.

Ministers expressed concern over the difficult situation resulting from the PVYn virus infection and restrictions placed on the movement of P.E.I. seed potatoes to all North American markets. Stressing the need to restore market confidence and normal trade as soon as possible, they agreed to develop proposals for an eradication program and compensation plan to address financial loss on a urgent basis.

To respond in part to the long-term needs of farmers, Ministers agreed to release, in the near future a discussion document for the development of a national program for farm business management training, and a national farm finance policy. Ministers hope to make final decisions in July.

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While these details are being finalized, Ministers also agreed to continue selected farm business management activites in 1991-92. Up to $5 million in federal funding will be available to extend temporarily the Farm Management Initiative which expires this March.

At the same time, Ministers agreed that it is now time to move forward with the implementation of findings coming out of the Agri-food Policy Review. They anticipate taking action in a number of areas based on the key themes coming out of the 11 policy review task forces. These include maximizing trade opportunities, challenging unfair trade practices, expanding environmental efforts and successfully launching the new safety net program. The stage has now been set for the implementation of the task force recommendations.

Ministers reaffirmed their continued support for Canadian negotiating efforts in the Uruguay round of GATT. They noted the importance in resuming the negotiations as quickly as possible in order to secure results in all areas, particularly agriculture.

The federal Minister also indicated that provinces and the industry would be consulted in the development of objectives for the Canadian agri-food sector in the negotiations of the North American Free Trade Agreement.

The Ministers will meet again in Kananaskis, Alberta, July 2-3 to review the recommendations and courses of action taken at this meeting.

-30-

Principles for 1991 Third Line of Defence Initiatives

Transition assistance provided in 1991 as a bridge to new safety nets will:

a) be multi-facetted, reflecting the multi-facetted nature of the problems;

b) build on the objective of the new safety net program and be linked, as far as possible, to participation in the new safety nets;

c) be directed at providing a transition from income levels attained during the pre GRIP-NISA period based on those expected with GRIP-NISA;

d) be tied to longer-term adjustment measures which reduce production in line with longer-term market opportunities and the need to enhance soil conservation efforts;

e) be announced as soon as possible in 1991; cash advances can be utilized to adjust income to cash flow needs during the year;

f) be, to the greatest extent possible, delivered through GRIP-NISA delivery systems; longer-term adjustment assistance should utilize the most appropriate available existing federal and/or provincial delivery systems;

g) respect the need for equity among producers, commodities and provinces; and

h) be funded by the federal government, conditional on industry and provincial government commitment to address other initiatives that help the industry adjust to the long-term.

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CONFÉRENCE FÉDÉRALE-PROVINCIALE DES MINISTRES ET SOUS-MINISTRES DE L'AGRICULTURE

Communiqué de presse

RÉGINA (Saskatchewan)
Les 1er et 2 mars 1991

VEUILLEZ NOTER

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FEDERAL-PROVINCIAL COMMUNIQUÉ
COMMUNIQUÉ FÉDÉRAL-PROVINCIAL

Pour diffusion immédiate

LES MINISTRES FÉDÉRAUX ET PROVINCIAUX ONT FAIT PROGRESSER LE DOSSIER DU RARB ET DU CSRN

REGINA, le 2 mars 1991 -- Les ministres fédéraux et provinciaux de l'Agriculture se sont entendus aujourd'hui sur les critères des programmes de la troisième ligne de défense et ont mis la dernière main à la méthode de calcul des primes du Régime d'assurance-revenu brut (RARB) annoncé récemment pour 1991-1992.

Les modalités finales étant arrêtées, les gouvernements pourront offrir le programme aux agriculteurs à temps pour les semailles du printemps. Un comité continuera la définition des modalités du programme et l'examen des améliorations possibles qui pourront y être apportées. Les prix d'objectif et les primes par province pour chaque denrée seront déterminés et rendus publics au cours des prochains jours.

Le Compte de stabilisation du revenu net (CSRN) sera également offert aux agriculteurs pour l'année d'imposition 1990 dans les provinces participantes. Les efforts pour introduire le CSRN dans les autres provinces se poursuivront. Ensemble, les deux programmes offriront une stabilité à long terme aux agriculteurs canadiens et amélioreront de façon notable la situation du revenu des producteurs de céréales et d'oléagineux.

.../2

Les ministres ont pris connaissance d'un rapport du Comité sur la troisième ligne de défense. Vu l'ampleur du manque à gagner dans les revenus agricoles en 1990-1991 et comme les agriculteurs ne profiteront pas de tous les avantages du RARB et du CSRN avant 1992, les ministres ont reconnu qu'une aide provisoire sera nécessaire en 1991 pour assurer la transition vers ces programmes. En même temps, ils ont insisté sur la nécessité d'ajustements à long terme conçus dans le cadre du processus de la troisième ligne de défense.

Les ministres ont souligné que la troisième ligne de défense entre en jeu pour résoudre des problèmes pour lesquels le RARB ou l'assurance-récolte n'ont pas été conçus. Une entente est intervenue sur les principes qui guideront la conception de ces mesures. (Voir fiche documentaire.) L'aide provisoire envisagée pour 1991 sera financée par le gouvernement fédéral, mais à la condition que les provinces et les producteurs s'engagent à lancer des projets complémentaires qui aideront l'industrie à s'adapter à long terme.

Les ministres se sont également entendus pour offrir aux producteurs de denrées horticoles comestibles de participer au RARB et au CSRN dans le plus grand nombre provinces possible, dès 1991. Un comité chargé d'élaborer des options visant une amélioration à long terme de la stabilité du revenu des horticulteurs soumettra ses recommandations aux ministres à leur prochaine conférence annuelle, en juillet.

Les ministres ont exprimé leur inquiétude devant la situation difficile due à l'infestation du virus PVYn et des restrictions imposées à l'exportation des pommes de terre de l'Î.-P.-É. sur tous les marchés nord-américains.

Ils ont insisté sur la nécessité de rétablir dès que possible les échanges normaux et la confiance des marchés et se sont mis d'accord pour proposer de toute urgence un programme d'éradication et un plan de compensation pour les producteurs touchés.

.../3

Pour répondre en partie aux besoins à long terme de l'industrie, les ministres ont approuvé en principe les conclusions provisoires des Groupes d'étude sur le financement agricole et la gestion agricole, y compris l'élaboration d'un programme de formation, de services et de formation en gestion des entreprises agricoles et la formulation d'une politique de financement agricole. Les recommandations finales seront soumises à l'attention des ministres, au mois de juillet.

Pendant qu'on mettra la dernière main à ces programmes, les ministres ont également convenu de financer certaines activités de gestion des entreprises agricoles en 1991-1992. Le Trésor fédéral dégagera des fonds de l'ordre de cinq millions de dollars pour prolonger temporairement le Projet d'amélioration de la gestion agricole qui expire ce mois-ci.

En même temps, les ministres s'entendent sur le besoin d'aller de l'avant avec la mise en oeuvre de recommandations découlant de l'Examen de la politique agro-alimentaire. Ils prévoient agir dans plusieurs domaines clés identifiés par les 11 groupes de travail créés dans le cadre de l'Examen. Ces dernières comprennent, par exemple, l'optimisation des possibilités commerciales, la contestation des pratiques commerciales injustes, l'intensification des efforts de protection de l'environnement et le lancement réussi des programmes de sécurité du revenu. Tout est prêt maintenant pour la mise en oeuvre des recommandations des groupes de travail.

Les ministres ont réitéré leur appui aux efforts de négociation canadiens dans l'Uruguay Round du GATT. Ils ont souligné l'importance de reprendre les pourparlers le plus tôt possible pour permettre d'en arriver à des résultats dans tous les domaines, et en particulier dans le dossier de l'agriculture.

.../4

Le ministre fédéral a aussi déclaré que le secteur et les provinces seraient consultés dans le cadre de la mise au point des objectifs du secteur agro-alimentaire canadien dans les négociations d'un accord de libre-échange nord-américain.

Les ministres se réuniront à nouveau à Kananaskis, Alberta, les 2 et 3 juillet, pour examiner les recommandations et les lignes de conduite adoptées à la présente réunion.

- 30 -

Principes sous-tendant la troisième ligne de défense pour les céréales et oléagineux

L'aide transitoire fournie en 1991 en prévision de l'application des nouveaux filets de protection ou programmes de sécurité du revenu sera :

a) à facettes, c'est-à-dire reflétant la complexité des problèmes;

b) fonction des objectifs des nouveaux programmes de sécurité du revenu et liée le plus possible à la participation à ceux-ci;

c) destinée à servir de transition entre le niveau de revenu atteint avant l'application du RARB-CSRN et celui auquel on s'attend après;

d) complémentaire des rajustements à long terme, de manière à adapter la production aux opportunités du marché à long terme et à la nécessité de renforcer les efforts de conservation des sols;

e) annoncée le plus tôt possible en 1991; des avances en espèces pourront servir à rajuster le revenu selon les besoins en liquidités durant l'année;

f) fournie, dans la mesure du possible, par le biais des systèmes d'application du RARB et du CSRN; l'aide au rajustement à long terme devrait être acheminée par les systèmes fédéraux ou provinciaux déjà existants les mieux appropriés;

g) respectueuse des besoins d'équité entre les producteurs, les secteurs et les provinces;

h) financée par le fédéral à condition que le secteur et les provinces s'engagent à entreprendre d'autres projets qui aideront le secteur à s'adapter à long terme. pour la présente décennie et le prochain siècle.

FEDERAL-PROVINCIAL CONFERENCE OF MINISTERS AND DEPUTY MINISTERS OF AGRICULTURE

CONFÉRENCE FÉDÉRALE-PROVINCIALE DES MINISTRES ET SOUS-MINISTRES DE L'AGRICULTURE

REGINA, Saskatchewan
March 1 and 2, 1991

RÉGINA (Saskatchewan)
Les 1er et 2 mars 1991

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FEDERAL-PROVINCIAL-TERRITORIAL CONFERENCE OF MINISTERS RESPONSIBLE FOR CULTURE AND HISTORICAL RESOURCES

Communiqué

TORONTO, Ontario
October 24-25, 1991

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COOPERATION STRESSED AT CULTURE MINISTERS MEETING

FOR IMMEDIATE RELEASE

TORONTO, Ontario - October 24-25, 1991 -- Federal, provincial and territorial ministers responsible for culture and historical resources reaffirmed the importance of cooperation in their continuing work to better respond to the aspirations and interests of the cultural community.

The Ministers expressed regret that Québec was not at the meeting.

The Ministers stated their belief in the importance of culture to the country and committed themselves to ensuring that cultural and heritage issues are considered on national, provincial and territorial agendas, and promoted at the municipal level. The ministers also affirmed that the significant and continuing role of the federal government is critical to maintaining the responsibility for supporting cultural activity that is shared by all governments.

On the federal government's constitutional proposals, the Ministers had an open and constructive discussion. The Federal Minister, Perrin Beatty, stated that national institutions would remain a federal responsibility. Mr. Beatty also indicated his willingness to work with the provinces to discuss the delivery of cultural programming and re-stated the federal government's financial commitment to maintaining federal cultural programs and institutions.

Ontario Minister of Culture and Communications, Karen Haslam, on behalf of the provincial Ministers was pleased to acknowledge these commitments and the willingness of the federal government to discuss means whereby the cultural community could be better served.

The federal, provincial and territorial Ministers indicated their desire to develop a strategic approach to future priorities. They also agreed that it is essential that cultural communities be consulted in the developing of more comprehensive and cooperative approaches to cultural initiatives. They instructed their Deputy Ministers to initiate the process.

With regard to other items on the agenda, the provincial and territorial ministers acknowledged the role of governments as stewards of cultural and heritage activities. They supported proposals that call for expanded dialogue with the ministers of education on the importance of arts education. The ministers stressed that the arts contribute to the essential skills, knowledge and attitudes required for a well-rounded education. In this regard, they anticipate future direct consultations with their colleagues.

Finally, ministers emphasized the value of cultural and heritage activity and the significant contribution they make to our lives, our economy, and our understanding of one another. They urge all Canadians to join them in supporting our country's creators, performing artists, and cultural and heritage institutions and to continue to position cultural activity within the priorities of government.

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CONFÉRENCE FÉDÉRALE-PROVINCIALE-TERRITORIALE DES MINISTRES RESPONSABLES DE LA CULTURE ET DES RICHESSES HISTORIQUES

Communiqué

TORONTO (Ontario)
Les 24 et 25 octobre 1991

VEUILLEZ NOTER

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LA CONFÉRENCE DES MINISTRES DE LA CULTURE SOULIGNE L'IMPORTANCE DE LA COOPÉRATION

POUR PUBLICATION IMMÉDIATE
Le 25 octobre 1991

TORONTO (Ontario) - les 24 et 25 octobre 1991 -- Les ministres fédéral, provinciaux et territoriaux responsables de la culture et des richesses historiques ont réaffirmé l'importance de la coopération pour mieux répondre aux aspirations et aux intérêts de la communauté culturelle.

Les ministres ont regretté l'absence du Québec à la conférence.

Ils ont signalé l'importance de la culture pour le pays et se sont engagés à veiller à ce que les questions culturelles et patrimoniales soient considérées à l'échelle nationale, provinciale et territoriale et à les promouvoir au niveau municipal. Ils ont aussi mentionné que le rôle continu et indéniable du gouvernement fédéral est essentiel au maintien de la responsabilité de soutien des activités culturelles, responsabilité que tous les gouvernements partagent.

Les ministres ont eu une discussion ouverte et constructive sur les propositions constitutionnelles du gouvernement fédéral. Le ministre canadien des Communications, M. Perrin Beatty, a déclaré que les institutions nationales continueraient à relever du gouvernement fédéral. M. Beatty s'est aussi déclaré prêt à travailler avec les provinces pour discuter de la prestation de

programmes c turels et a confirmé l'engagement financier du gouvernement édéral pour maintenir les institutions et les programmes c turels fédéraux.

La ministre arienne de la Culture et des Communications, Mme Karen Has m, a exprimé, au nom des ministres provinciaux, sa satisfaction ace à ces engagements du gouvernement fédéral et à sa volonté d discuter de moyens de mieux desservir la communauté culturelle.

Les ministre: édéral, provinciaux et territoriaux ont exprimé le désir d'élab r une approche stratégique en matière de priorités futures. Il rouvent qu'il est vital de consulter les communautés turelles pour mettre sur pied des mécanismes plus globaux et p coopératifs et ils ont demandé à leurs sous-ministres de tre ce processus en oeuvre.

Quant aux au s points à l'ordre du jour, les ministres provinciaux erritoriaux ont reconnu le rôle de leur gouvernement me chefs de file en matière d'activités culturelles patrimoniales. Ils ont appuyé des propositions qui demanden n dialogue élargi avec les ministres de l'éducation l'importance de l'éducation artistique. Ils ont souligné que s arts contribuent à développer des compétences, des connaiss es et des attitudes essentielles à une éducation complète. I prévoient, à cet égard, des consultations avec leurs collèg .

Enfin, les m tres ont rappelé la valeur de la culture et du patrimoine e eur contribution importante à nos vies, à notre économie et à otre compréhension mutuelle. Ils invitent les Canadiens à s joindre à eux pour appuyer les créateurs, les artistes et l institutions culturelles et patrimoniales dans

leur effort en vue de maintenir l'activité culturelle comme priorité gouvernementale.

- 30 -

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CONFÉRENCE FÉDÉRALE-PROVINCIALE-TERRITORIALE DES MINISTRES RESPONSABLES DE LA CULTURE ET DES RICHESSES HISTORIQUES

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MEETING OF THE CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT (CCME)

1991 Environmental Scan

-Draft

CCME

HALIFAX, Nova Scotia
May 6, 1991

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(Front Cover)

1991 Environmental Scan

National and International Environmental Issues

(CCME logo)

(Inside Front Cover)

The Canadian Council of Ministers of the Environment (CCME) is the major intergovernmental forum in Canada for discussion and joint action on environmental issues of national, international and global concern. Environment ministers from each of the ten provinces, the federal government, and the two territories participate in council meetings at least twice a year. They discuss environmental issues, exchange information, make decisions and establish policy for work to be carried out under the auspices of CCME.

The presidency of CCME and other official posts are rotated annually among member governments.

Between meetings of the Council of Ministers, the work of CCME is managed by a Deputy Ministers Committee and a full-time Secretariat. The Secretariat, in Winnipeg, Manitoba, provides administrative, technical and policy support to the Council of Ministers and various CCME committees. Two permanent intergovernmental steering committees provide ongoing advice to the Deputy Ministers Committee and coordinate specific CCME projects assigned to intergovernmental task groups.

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TABLE OF CONTENTS

FOREWORD

EXECUTIVE SUMMARY 4

Chapter 1:

INTRODUCTION AND BACKGROUND

1. Public Expectations 14
2. Environment / Economy Integration 22
3. The Green Plan 23
4. International Issues 24
5. Constitutional Change 24

Chapter 2:

INTERNATIONAL ISSUES

Global issues 28
1. Ozone Depletion 29
2. Climate Change 30
3. Forestry 33
4. Long Range Transport of Air Pollutants 34
5. ECO '92 35
6. Marine Environmental Quality 36
7. Circumpolar Cooperation 38
8. International Trade 38

Bilateral issues 39
1. Acid Rain 39
2. Air Toxics 40
3. North American Waterfowl Management Plan 41
4. The Great Lakes 42

Chapter 3:

NATIONAL ISSUES

Improved Decision-Making 44
1. Accountability 44
2. Environment / Economy Integration 50
3. Policy Instruments 52
4. Environmental Reporting 59

Environmental Protection and Rehabilitation 62
1. The Ecosystem Approach 62
2. Air Issues 68
3. Water Issues 71
4. Land Issues 76
5. Emergency Preparedness 81
6. Scientific Research 82

Renewable Resource Management 83
1. Forestry 83
2. Parks and protected areas 85
3. Biodiversity 87
4. Agriculture 88
5. Fishery 90

Energy 91
1. Energy Conservation 92
2. Nuclear Power Generation 94
3. Frontier Oil and Gas Development 96

BIBLIOGRAPHY 97

FIGURES

Chart A. Growth of public concern over the environment 16
Chart B. Public response to impact of environment on human health 17
Chart C. Changes in public concern over environmental issues 18
Chart D. Canadians' criticism of their governments and themselves has increased dramatically 19
Chart E. Who are the most trusted sources of information 20
Table 1. International comparison: Anthropogenic additions to the carbon dioxide flux, 1987 32
Table 2. Urban air quality in Canada 69
Table 3. International comparison: Annual municipal waste generation, 1987 77
Table 4. International comparison: Energy use per capita, 1987 94

FOREWORD

The *1991 Environmental Scan*, prepared for the Canadian Council of Ministers of the Environment (CCME), identifies current and emerging environmental issues of national and international importance.

Early in 1990, the Canadian Council of Ministers of the Environment began a major restructuring in order to more effectively address the large number of important environmental issues facing the country. A new, streamlined organization now enables member governments to respond quickly to emerging issues, develop national environmental strategies and establish long-term plans.

Given the variety and number of environmental issues facing Canadians, CCME recognized the need for a systematic approach to identifying its priorities. In October 1990, the organization adopted an eight-step strategic planning process. The first step in the process is the preparation of an environmental scan.

The *1991 Environmental Scan* was prepared for CCME by the consulting firm Resource Futures International (RFI) in cooperation with the Institute for Research on Public Policy (IRPP).

EXECUTIVE SUMMARY

FORCES DRIVING ENVIRONMENTAL POLICY

Canadian environmental policy at both the federal and the provincial/ territorial levels is influenced by a number of factors, chief among which are:

- the continuing deterioration in environmental quality,
- sustained public concern,
- the influence of international issues,
- the costs of traditional approaches to environmental management.

Continuing deterioration in environmental quality

Although there have been notable achievements in recent years in addressing the effects of environmental deterioration at the national and international levels, environmental quality as a whole continues to decline. At the global level, the trends signaled by the Brundtland Commission -- the depletion of the ozone layer, the threat of climatic change, the loss of biodiversity, tropical deforestation and the spread of deserts -- all continue largely unabated. At the national level, the major concerns relate both to the management of renewable resources and pollution. Some examples:

- in the last 15 years, the amount of wildlands in Canada has declined by four percent;
- the area logged exceeds the area successfully regenerated by approximately 250,000 hectares annually;
- all of the Great Lakes are threatened by an accumulating load of toxic contaminants;
- proposed reductions in sulphur dioxide emissions will allow only about nine percent of lakes already acidified to recover.

Sustained public concern

Public concern over the environment has increased markedly since the mid-80s, largely as a result of the fear of Canadians that pollution is starting to affect their health: nine out of ten Canadians believe that pollution will adversely affect public

health and a slightly smaller number believe that the very survival of the human species is at stake. The link Canadians increasingly make between environmental quality and health implies that concern over the environment will remain high over time even if it temporarily subsides as a result of constitutional or economic factors.

As Canadians become more concerned about the possible health effects of environmental degradation, they become more critical of both government and industry: in the fall of 1989, over a third of Canadians believed that the federal and provincial governments were doing a poor job of protecting the environment, double the number who were sceptical two years earlier. The rising public concern over the deteriorating environment, coupled with the declining trust of Canadians in their governments, makes the context in which environmental policy is developed very volatile (see charts in main report).

Influence of international issues

The domestic environmental agenda will increasingly be influenced by international factors. As Canadians must learn to compete in a global economy, so must their environmental policies reflect international trends. The first two disputes under the Free Trade Agreement to reach the dispute-resolution mechanism dealt with resource management practices (salmon landings on the West Coast, the size of caught lobster off the East Coast). International protocols, such as the Montreal protocol, already guide domestic policy. A possible global climate convention, scheduled for UNCED '92, would have a major impact on Canadian energy policy.

Costs of traditional approaches

The last major factor driving Canadian environmental policies is that the traditional "react and cure" approaches are becoming prohibitively expensive. An Ottawa economic consulting firm has calculated that the incremental costs to the year 2000 of reducing water and air pollution, including the emission of greenhouse gases, could amount to $90-billion. At a time of continuing budget deficits and forecasts of sluggish economic growth, no country will be able to afford an environmental policy based exclusively on remedial action. The high cost of environmental protection and rehabilitation will require that greater attention be given to defining the costs and benefits of environmental objectives. It will also force a policy shift from remedial approaches to anticipatory and preventive strategies. The need to "anticipate and prevent" environmental damage will change profoundly the way in which policy is formulated and implemented in the future.

THE CHANGING POLICY ENVIRONMENT

The way in which the federal, provincial and territorial governments make environmental policy will be greatly influenced by the considerations outlined above. The report focuses on four factors in particular in analyzing this change: the demand for greater accountability, the need to integrate environmental considerations into economic decision-making, the greater use of economic

instruments and environmental reporting (see the section on improved decision-making in Chapter 3).

Accountability

Accountability is emerging as one of the key environmental issues of the 1990s. Many of the institutional reforms which are the subject of public debate have increased accountability as a common theme: this is true of environmental assessment, the creation of an environmental ombudsman or auditor, the enactment of environmental bills of rights (creating more opportunities for public input in decision-making) and the development of environmental indicators.

Low confidence in government and large corporations is at the root of the rising public concern over accountability. As the public becomes increasingly concerned about the economic and health costs of environmental degradation, it will demand a more thorough accounting by both government and the private sector of the actions they take to protect and restore environmental quality.

Environmental assessment

Environmental assessment has become a lightning rod for all stakeholders in environmental policy: environmental groups lobby for a rigorous application of the process; industry worries about uncertainty and the potential for costly delay; provincial governments try to protect their jurisdiction from perceived federal encroachment; the federal government is concerned about losing control over its process to the courts. It will continue to be a very high profile issue, in part because its application remains one of the most visible manifestations of the extent of governments' commitment to the environment. Furthermore, the application of the process provides an endless series of platforms for confrontation.

Although most political and media attention is likely to focus on seemingly isolated *causes célèbres* (such as Rafferty-Alameda, Oldman, James Bay II), these are in fact the outward manifestations of more fundamental cross-cutting issues. These issues include:

- the scope of the process, including its application to policies and programs as well as projects;
- auditing and monitoring process;
- public review; and
- interjurisdictional cooperation.

Environmental Auditor

The idea that an independent environmental auditor should be established to oversee the implementation of the federal government's environmental decision-

making process has gained considerable currency in the last two years. In his latest Annual Report, the Auditor General of Canada identifies the adequacy of environmental accountability as one of the issues that his Office will monitor in the future.

Public Consultation

Fuelled by mistrust, public expectations about the appropriate forms of consultation are rising faster than governments' ability or willingness to deliver. This is true even though governments engage in more consultation than ever before. As a result of rising expectations, governments face a ratcheting effect: the previous "good" consultation process becomes the minimum standard for the next one.

The consultation load will increase rapidly in the next few years. The federal government is already committed to a series of consultations as a result of the *Canadian Environmental Protection Act* and the Green Plan. Provincial and territorial governments and the Round Tables will hold their own. This trend raises a series of questions: how will governments derive maximum value from these consultations? how can the public and stakeholders make the most effective contribution? how should consultation processes be "matched" to the kind of advice sought? how can overload, consultation "fatigue" and cynicism be prevented?

Environmental Bills of Rights

An alternative to direct government regulation of polluters is the "environmental bill of rights". These bills come in the form of legislation enabling the individual, rather than the state, to enforce environmental laws. Other important components of such legislation are the provision of compensatory damages for general harm to the environment; protection from discrimination for public servants who disclose environmental violations of their employers; public access to government information; and the office of an environmental auditor or ombudsman with a broad mandate to investigate and advise on the performance of agencies, management strategies and legislation and to provide access to information.

Environment/Economy Integration

<u>Changes in decision-making</u>

The greater weight being placed on environmental factors is changing decision-making practices at all levels of government, in industry and in individual behaviour.

All levels of government have recently taken initiatives in the areas of internal organization, planning processes, public consultation and project assessment to integrate environmental considerations more effectively in their decision-making. Several other jurisdictions can also point to the establishment of Cabinet or senior-level committees to promote sustainable development. These structural and procedural reforms will continue. Comparable changes can be expected in the private

sector, where codes of ethics, environmental audits, and making senior decision-makers accountable for environmental issues are becoming increasingly prevalent. Individuals, too, are beginning to change their behaviour as the success of the "blue box" recycling programs and the marketing of "green products" attest.

The goal of these changes is to ensure that the health of the ecosystem is maintained and, where necessary, restored, for the use of present and future generations. The essence of ecosystemic management -- reconciling the fundamental incongruity between political and ecological boundaries and transcending the parochial tendencies of individual jurisdictions in favour of advancing the common good -- represents a formidable institutional challenge.

Round Tables

The social experiment which the Round Tables represent is still inconclusive. None has yet gone through the hard choices necessary to integrate environment and economics in the form of a sustainable development strategy. None has yet presented a report to its government that requires immediate action. The value of this experiment, however, will become clear very soon. Over the next two years, most CCME governments will have to react to the conservation or sustainable development strategies which the Round Tables are preparing. The National Round Table will not produce a national conservation strategy although it will initiate a series of "dialogues" among stakeholders in various economic sectors.

Economic Instruments

The market system is widely seen as the most efficient means of allocating resources. In a market-based economy such as Canada's the efficient allocation of resources will require the greater use of economic instruments to achieve the country's environmental objectives.

Environmental policy in North America has been dominated by the traditional "command and control" approach to regulation. This approach is characterized by phrases such as "best available technology" or "best practicable technology". The command and control approach has very real political advantages, especially in an age of public concern with the environment. It appears simple, it treats everyone the same way, and it is often combined with pledges to punish polluters severely. It may also be popular with some segments of industry who see it as predictable, creating a level playing field and being less technologically risky than other methods.

Critics, however, point out that it stifles the development of new technologies, especially in the form where the regulation can actually specify the technology. The Green Plan contains a provision for the release of a discussion paper in 1991 on the use of economic instruments in environmental protection.

Measuring Ecological Capital

The merging of environment and economics requires that we treat the world's renewable natural resources as capital and that we attempt to live off the interest of

that capital, rather than constantly running down the principal as the statistics tell us we now do. This will require accounting for the ecological capital in a country's balance sheet, much as we now account for the manmade capital of housing, factories, roads, machinery and the like.

Market Based Incentives

Though command and control may continue as an approach to regulation, arguments have been advanced that a more efficient allocation of both government and social resources would result from a greater use of market based incentives. Various types of pollution would be treated as costs imposed on society in the form of depreciating natural capital, morbidity and mortality, aesthetic damage, and so on.

Because they employ market mechanisms, incentives should be superior to command and control in making product prices reflect true production costs. Market based incentives will not entirely eliminate reliance on command and control. Many environmental actions governments must take are of a non-market character – the development of parks or the protection of endangered species, for example. It must also be noted that an incentive based approach would not reduce governments' regulatory responsibility. As with "command and control", governments would continue to set regulatory agendas, establish standards, and ensure compliance. Nor would the use of market based incentives diminish the need for government support of research into pollution causes and effects.

Market-based incentives include pollution taxes and charges; emission permits; tax incentives and subsidies and the privatization of some common property resources. These policy instruments are discussed in Chapter 3.

Environmental Reporting

As the link between human health and environmental quality becomes more firmly established, public demand for access to environmental information will increase. Today, such information often does not exist, is inconsistent or is inaccessible. The lack of reliable environmental information constitutes an obstacle to decision-making in several fields. The federal government's Green Plan makes a number of commitments to improve this situation, including natural resource accounting; a national environmental information network; a national state of the environment organization; and environmental indicators.

Canada, Manitoba, Saskatchewan and British Columbia are all to release State of the Environment reports in 1991.

Indicators

The public judges a government's economic performance informally by referring to a wide array of economic indicators. These indicators play a powerful role in communicating to the electorate what is the state of the economy. They not only influence decisions taken by consumers and investors but also the government's political popularity. There is no parallel system of environmental indicators in

Canada today which would allow the electorate to judge the government's environmental performance. The federal government published in early 1991 a preliminary set of environmental indicators for Canada.

ENVIRONMENTAL ISSUES

International issues

Ozone depletion

The Montreal Protocol, first negotiated in 1987 and strengthened in 1989, is one of the few successful attempts to remedy an international environmental issue. Mr. de Cotret recently announced that Canada is already ahead of schedule in eliminating CFC production.

Climate change

Global warming is the most important issue to emerge on the international scene. Since land masses at higher latitudes are expected to experience two to three times the level of warming, Canada could be affected to a far greater extent than many other nations.

Although the exact consequences of global climatic warming are unknown, it is expected that major shifts in rainfall patterns, massive flooding in low lying countries and unpredictable changes in agriculture, forestry and plant and animal habitat will result. The Second World Climate Conference held in 1990 agreed that negotiations for a binding international agreement on climate change should begin this year.

Controlling emissions of greenhouse gases has obvious ramifications for a major energy producer like Canada. Although we produce only two percent of the world's emissions of CO_2, we are one of the largest per capita producers of greenhouse gases in the industrialized world. In the absence of concrete actions to curb emissions, the Green Plan predicts a 17 percent increase in Canadian CO_2 emissions by the year 2000. The Green Plan proposes, therefore, the beginning of a national strategy for CO_2 limitation.

Forestry

Another international issue is tropical deforestation. Forests perform a range of functions, including employment, a carbon sink, provision of the most diverse ecosystems known to mankind, climate moderation and soil and water management. The realization that the world's main repositories of genetic diversity are disappearing is a major cause of the public's concern over the environment. The Houston Economic Summit proposed a world agreement on forestry be prepared for

the 1992 Conference in Brazil. Canada has been one of the most active proponents for such a convention.

Air toxics

Air toxics are a problem of international scope due to the long range transport of air borne pollutants. Concern for these air pollutants led to the 1979 ECE Convention on Long Range Transport of Air Pollution and a protocol for international monitoring and assessment. In 1985 the ECE created the Helsinki Protocol which calls for a 30 percent reduction in sulphur dioxide emissions. In 1988, Canada, along with the U.S. and other nations, signed on to the Helsinki Protocol committing to an additional freeze of nitrous oxide emissions at 1987 levels. In Canada's Green Plan the government states its intention to press for renegotiation of the Helsinki Protocol to include volatile organic compound (VOCs) emissions.

On the Canada-U.S. agenda, acid rain is the best-known air toxic issue. In Canada, the effects of acid rain have damaged an estimated 150,000 lakes with 14,000 already considered "dead". An increase in human respiratory problems is also attributed to acid rain. Estimates place the annual cost of acid rain to the national economy at $1-billion. Bilateral cooperation has led to the 1979 Memorandum of Intent concerning Transboundary Air Pollution and the Great Lakes Water Quality Agreement, favouring joint research and negotiation. A Transboundary Air Quality Agreement, modeled after the Great Lakes agreement, is currently at the negotiating stage.

The Green Plan contains a commitment to implement a ten-year management plan, adopted by the CCME in 1988, to reduce NOx and VOCs emissions in problem areas by 40 percent by the year 2000; and to cap the nation's sulphur dioxide emissions for the year 2000.

The Great Lakes

In spite of all the attention, Great Lakes pollution problems persist. The problem is in three parts. First, historic deposition of persistent pollutants like PCBs and heavy metals like lead remain in many areas of the Great Lakes. Second, current discharges continue to threaten the lakes' water quality with both biological and toxic chemical pollutants. In addition to these point-source discharges, there are non point-source ones involving farmland run-off containing chemical fertilizers and pesticides, and chemical and biological leachate migrating from abandoned dumps. There have been some successes in cleaning up the discharges to the Great Lakes. Eutrophication caused by biological discharges has been reversed. Over $10-billion has been spent by the U.S. and Canada on building and improving municipal sewage treatment plants, but this has been insufficient to keep up with industrial growth in the region. The bilateral Great Lakes Water Quality Agreement of 1978 calls for "zero discharge" of these industrial pollutants.

National Issues

Air Quality

Air quality in most Canadian cities with population in excess of 100,000 is monitored by the federal government through the National Air Pollution Surveillance. Ground level ozone is the most serious of the measured air pollutants and is being produced in greater concentrations each year. In 1987, 52 percent of the stations recorded ozone concentrations higher than the maximum acceptable level set by the National Ambient Air Quality Objectives. The major urban source of ozone is the exhaust from gasoline powered vehicles. The Green Plan has set a nationwide goal to reduce ground level ozone.

Water Quality

Water is Canada's most abundant natural resource. It is also the most abused and undervalued. Our aquatic ecosystem is under stress due to manmade inputs from both land and air. Some of the most pressing problems include: untreated sewage, industrial waste products, physical degradation such as wetland drainage and chemical loading from air borne transport of pollutants.

Urban wastewater, much of it found in the same watercourses that we depend upon for drinking water, has several sources. The most significant is sewage. Only half of the nation's urban population is served by secondary sewage treatment or better. Industrial wastes are either rich in organic matter which depletes oxygen levels in water thus killing aquatic organisms, or contain chemicals that are either lethal or accumulate in the food chain thereby making fish unfit for human consumption.

From 1971 to 1981, water withdrawals increased in Canada by over 50 percent, while the population increased only five percent. The "user-pay" or "full-cost pricing" approach is not applied systematically to water in any of its uses.

Solid and Hazardous Wastes

Waste disposal is rapidly becoming the most critical issue facing larger municipalities. The problem is exacerbated by rising disposal costs and increasing financial restraint. Waste disposal is a provincial, municipal and national problem. Planning and action is required across a broad front -- reduction, re-use, recycling and recovery -- using all the tools available to governments, such as education, regulation and research and development. Packaging is the single largest component of solid waste. The CCME has endorsed a 1990 National Packaging Protocol to reduce packaging by 50 percent by the year 2000.

Canadians produce eight million tonnes each year of hazardous waste of which only 40 percent is treated. Clearly, management must begin with a substantial reduction of the chemicals produced. The Green Plan proposes the reduction, safe transportation and disposal of hazardous wastes in Canada through: the destruction of all PCBs under federal jurisdiction by 1996; development of technology to recycle

or destroy hazardous waste; and federal-provincial regulations for the safe management of waste transportation and disposal sites.

Forests

Canada has approximately 453 million acres of forest land and one of the world's largest forest industries. This country possesses 25 percent of the world forest market. During the 1980s, 650 million trees were harvested annually, resulting in direct forest industry employment of 270,000 and an export value of $23-billion. The economic importance of the forest industry has overshadowed the ecological importance of forest ecosystems.

Management of the industry is characterized by practices, such as clear-cutting, that maximize the value of lumber and ignore the value of the forest as habitat for wildlife, a purifier of air and water, a windbreak across flatlands and protection against erosion and flooding. There is serious concern that both the present level and method of harvesting cannot be sustained. Due to diminishing stocks, Canada's Annual Allowable Cut has dropped from 256 million cubic metres in 1970 to 204 million in 1986. The Canadian Council of Forest Ministers has recommended that forest management account for non-timber values such as wildlife, fisheries and recreation; and that resource allocation to exclusive uses, such as lumber, be subject to rigorous cost/benefit analysis.

Energy

The environmental consequences of energy use are pervasive, playing an important, if not dominant, role in many of the key environmental issues of the day. The most serious pollution problems globally – climate change, depletion of the ozone layer, acidification and urban air pollution – are all attributable to a large degree to the combustion of fossil fuels. In its report, the Bruntland Commission noted that "choosing an energy strategy inevitably means choosing an environmental strategy".

Between 1973 and 1986, Canadians "found" twice as much energy through conservation than was added in new oil, gas and electricity supplies. As a result, the amount of energy needed to produce one dollar of GNP dropped by 14 percent between 1973 and 1986. Although substantial, this decrease is only two-thirds of what was realized by other OECD member nations during this same period.

Chapter 1

INTRODUCTION AND BACKGROUND

SECTION	SUBJECT	PAGE
1.	Public Expectations	14
2.	Environment / Economy Integration	22
3.	The Green Plan	23
4.	International Issues	24
5.	Constitutional Change Division of Powers Aboriginal Issues	24

INTRODUCTION AND BACKGROUND

1. Public Expectations

It has become commonplace to refer to concern for the environment as the great new political issue of the 1990s. Polls throughout Europe and North America have shown an unprecedented degree of public concern about our environment and a perceived lack of effective political action to protect it. This concern is even spreading rapidly among the elites in the developing world. A recent poll conducted for the United Nations Environment Programme showed very similar results for both developed and developing countries.

The environment has remained at a high level in all the polls for the last three or four years (see Chart A). If the predominant economic issue is inflation or recession or unemployment, the environment may rank second or third for a time. In other years, it may even come first for a prolonged period of time, as it did last year. But it never falls below the first order of public concern. This is leading many of the polling organizations to conclude, as Alain Giguère of CROP told a number of House of Commons committees, that a fundamental and lasting change in values has occurred. [1] This conclusion was reinforced by an Angus Reid poll of 1659 Grade 8 students performed in 1989 for Southam News.[2] The children polled were extremely pessimistic about the future to the extent that environmental catastrophe may be replacing fear of nuclear war as their single greatest concern. This led Reid, perhaps the most conservative of our pollsters to conclude, "The greening of Canada has almost reached the state of a social movement."[3]

This environmental concern was originally driven by one of the strongest human emotions -- concern for personal health. This -- can I drink the water?, can I eat the food? -- phenomenon can pose real problems for public policy. For example, despite repeated assurances by public health authorities and the provincial government that the drinking water of Toronto is perfectly safe, the Crombie Commission reveals that up to a third of the population of the metropolitan area drinks bottled water on a regular basis. According to Synergistics (see Chart B) almost nine in ten Canadians feel that long term health already has been affected by pollution levels in their area. Three-quarters of our population feels that pollution is a major cause of cancer.

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[1] Alain Giguère, Presentation on Changes in Public Attitudes and Perceptions of Global Climate Change. Cited in *Parliamentary Forum on Global Climate Change*. Ottawa: House of Commons, 1990.

[2] A Southam Environment Project. *Ottawa Citizen*, October 7, 1989.

[3] *The Ottawa Citizen*, October 2, 1989.

Perhaps most alarmingly, 85 percent of the population considers pollution problems already serious enough to threaten the very survival of the human race.

Recent polling data from Synergistics indicate that this health worry is being reinforced by two relatively new, and more profound concerns. Canadians seem to be increasingly concerned about the legacy that they are leaving for their children and their grandchildren. The data from fall 1990 polls reveal that 77 percent of Canadians are very concerned about the fate of future generations. And, secondly, there is a growing worry that essential ecological support systems are unravelling. (See Chart C).

When asked who they feel is responsible for this sorry state of affairs, Canadians look to the federal government for leadership. About 30 percent feel that Ottawa should play a primary role in this area. In 1989, only five percent felt that the provincial governments bore prime responsibility. More alarming for Ministers of the Environment is the fact that public criticism of government performance has been growing dramatically, and it started growing even before the latest wave of public distrust in government generally. In 1989, 42 percent rated the performance of the federal government as "poor" (as opposed to 31 percent in 1988 and 20 percent in 1987). Provincial governments fared no better with a 46 percent poor rating as compared with 1988 results of 25 percent and 1987 figures of 15 percent. (See Chart D).

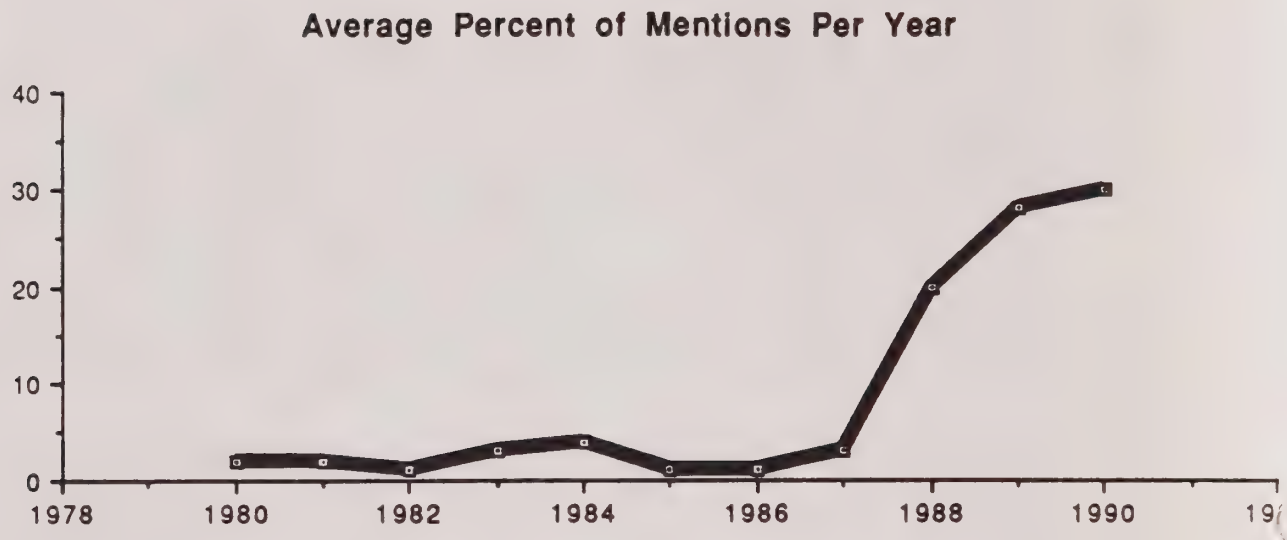
When asked who they trusted to produce reliable information on the subject, Canadians placed a great deal of faith in scientists and environmental groups (51 percent and 41 percent) and little in the federal and provincial governments (13 percent and 11 percent respectively in 1989). Private industry is trusted even less. (See Chart E).

> The price of continued success for every business will be actual and perceived corporate environmental responsibility.
>
> -JE Newall, Chairman, Du Pont Canada,
> *Globe and Mail*, June 29, 1990

So the pollsters tell us that the environmental issue is here to stay. Policy-makers are thus faced with an aroused electorate, one which is driven by a series of very basic concerns about its own health and survival and that of its children. This volatile mix is made even more unstable by the fact that the Canadian public seems to understand very little about the environmental problems themselves. An obvious example is the inordinate amount of money and time eventually devoted to the PCB problem in the wake of the fire at St-Basile le Grand.

Chart A

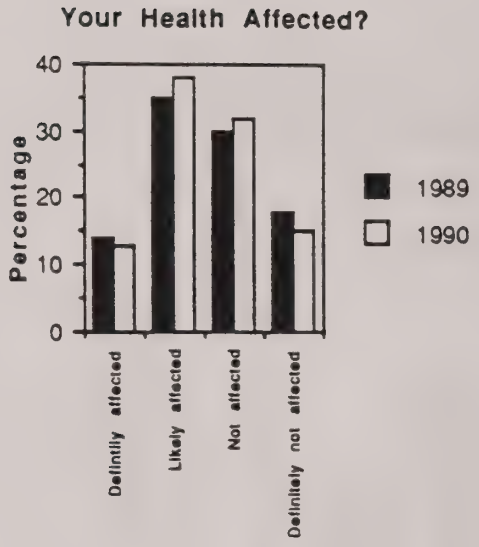
Growth of Public Concern
Over the Environment

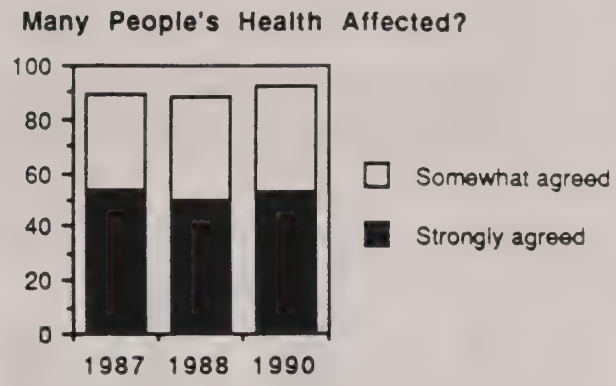


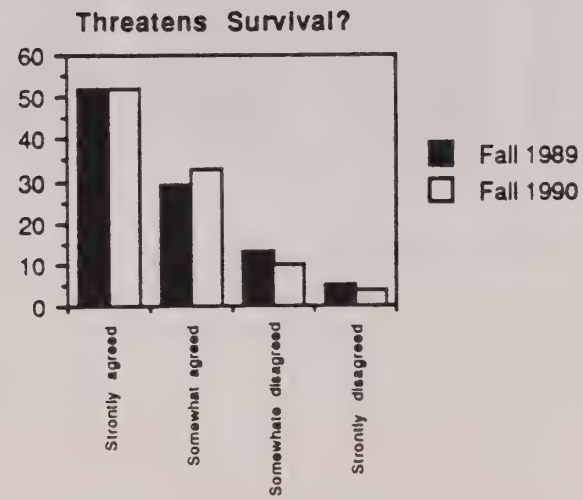
Source: *The Angus Reid Poll*

Chart B

Public Response to Impact of Environment on Health



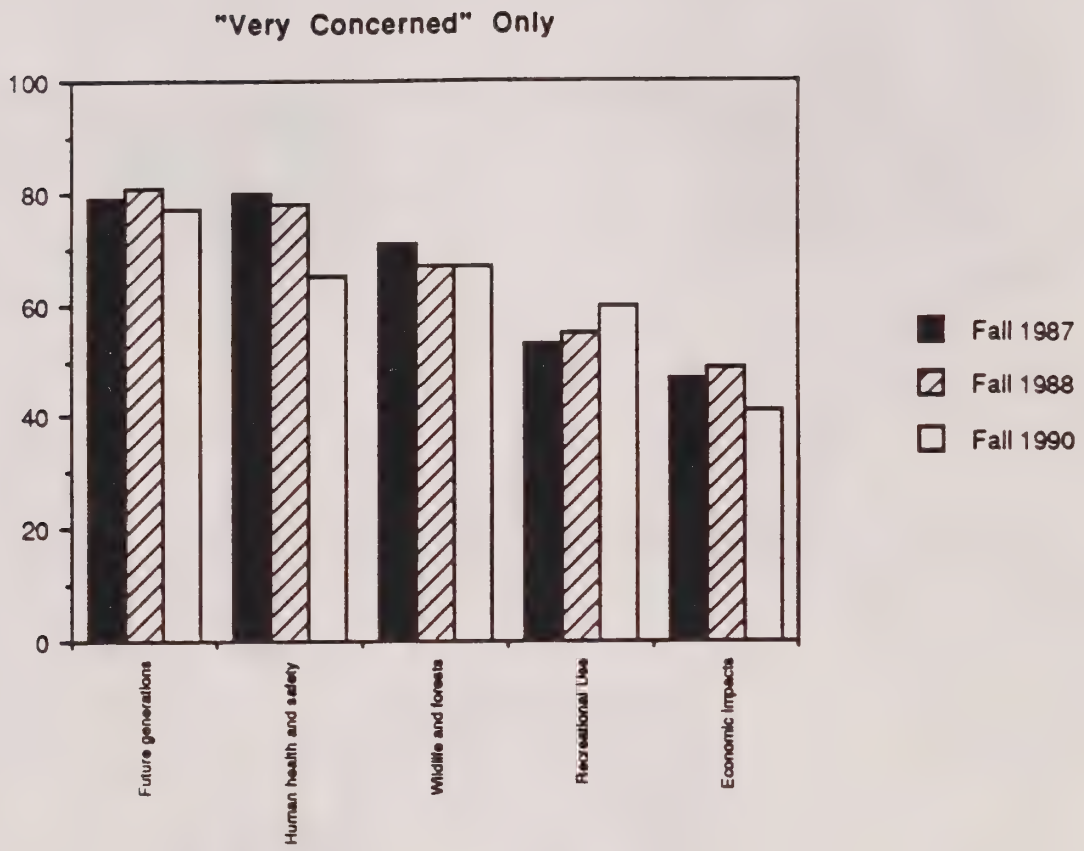




Source: *The Environmental Monitor*

Chart C

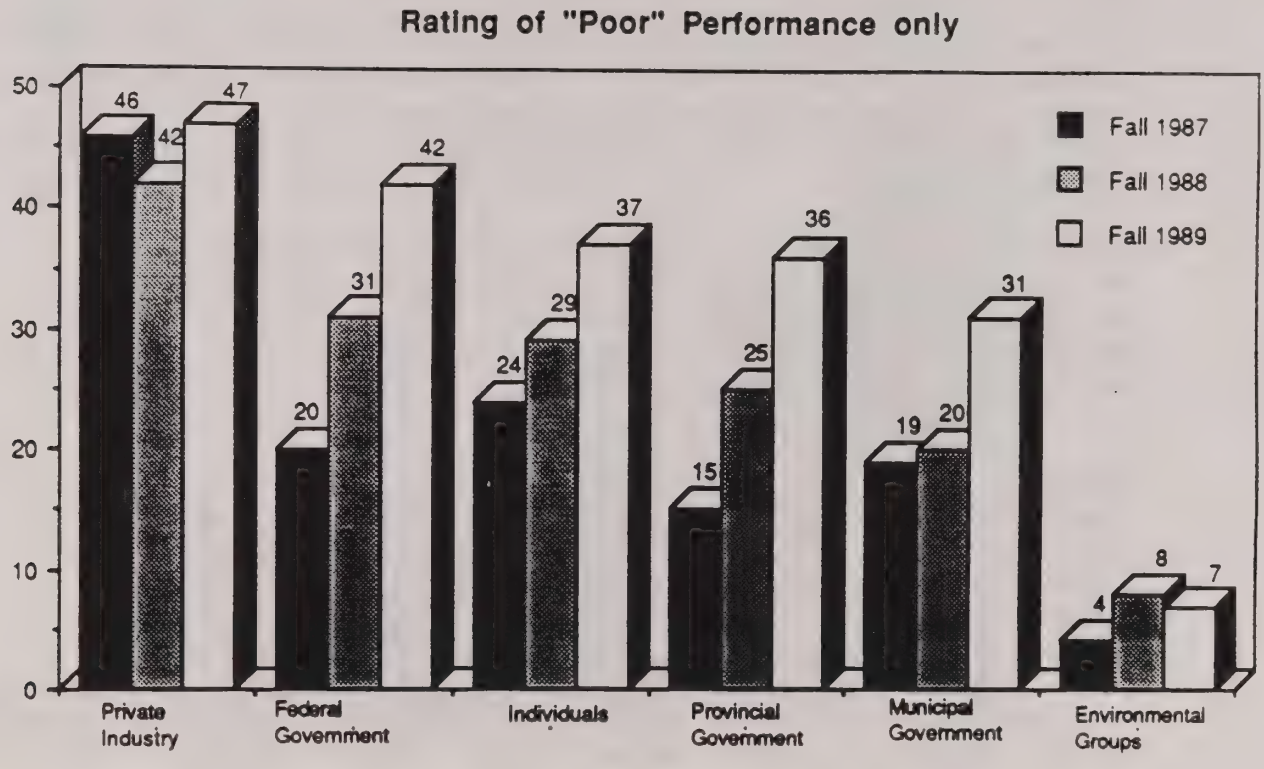
Changing Concern Over the Environment



Source: *The Environmental Monitor*

Chart D

Canadians' Criticism of Governments and Themselves Has Increased Dramatically

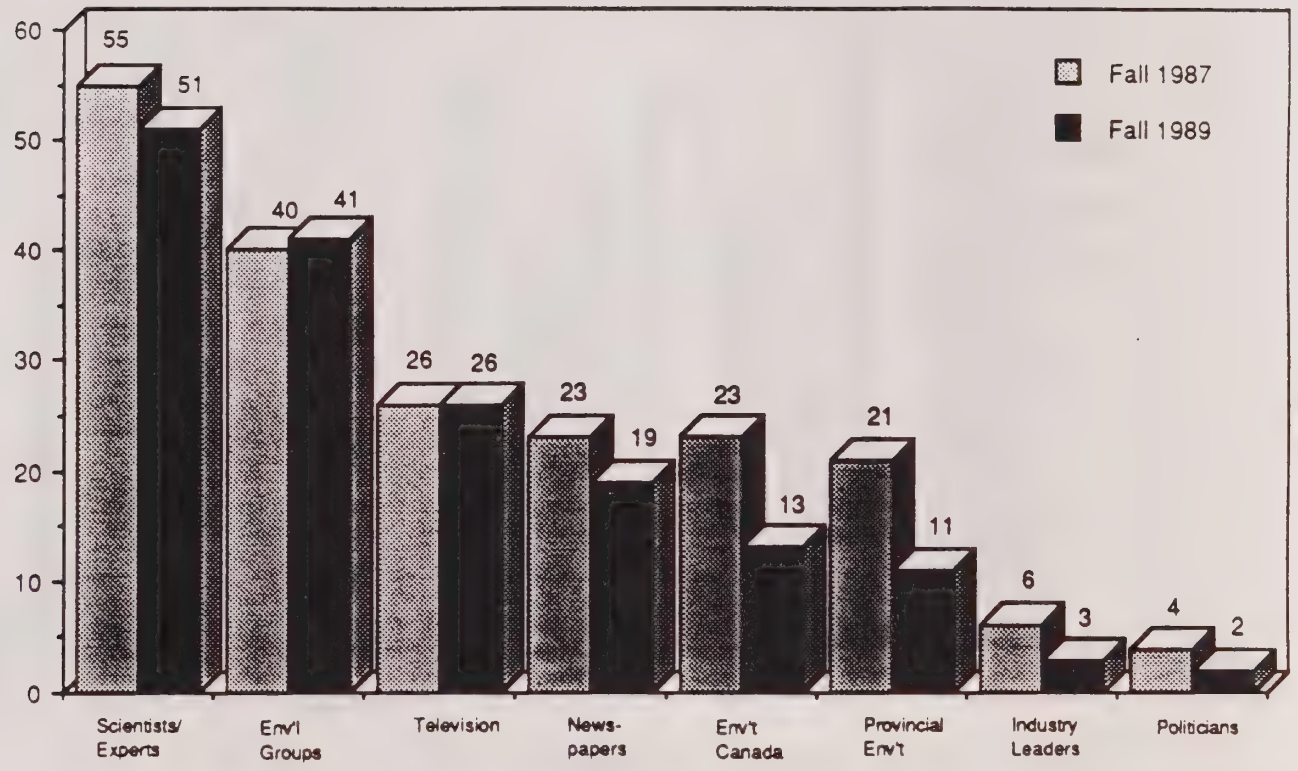


Source: *The Environmental Monitor*

Chart E

Scientists and Environmental Groups Are the Most Trusted Sources of Information

Percentage expressing "A great deal of confidence" in ...



Source: *The Environmental Monitor*

The policy choices are made particularly difficult by the lack of a common vision of the environmental future. A recent study of the state of the environment of the Great Lakes by the Institute for Research on Public Policy and the Conservation Foundation of the United States[4] concludes that public policy throughout the region is hamstrung by this lack of consensus about the future. Following the "success" of the clean-up of the lower lakes over the last few years, the remaining choices facing the governments of the region are especially complex. And the costs of these choices vary enormously. To ensure safe drinking water for every municipality in the basin would cost a few billion dollars, spread over a number of years. But to ensure that every beach is open for swimming throughout the summer would cost many billions more, as sewer systems are twinned and treatment plants expanded to deal with stormwater runoff (the costs to Toronto alone are estimated in the $2-billion range). To ensure that all fish are edible, that all beaches are swimmable, that toxic substances cease to be a problem, and that the fishery is a naturally reproducing one (which is what the public seems to want) would cost a staggering amount of money. Some estimates place it as high as $200-billion. There seems to be little public appreciation of the massive sums involved.

The public's initial concern for the environment was almost exclusively local or regional, with occasional reference to national problems. In the 1960s, however, new awareness that pesticide residues were present in the flesh of Antarctic wildlife, that a number of species of whales had nearly reached extinction and that acid rain had become a shocking problem in Scandinavia, made environmental issues international concerns as well.

The 1972 Stockholm Conference on the Human Environment made environmental planning and management a respectable part of the 1970s debate on development and the New International Economic Order. It explored the relationship between environmental decay and poverty, and demonstrated that development strategies must take environmental factors fully into account if their goals are to be achieved. It also led to formal environmental procedures and practices in a number of Third World countries. In the decade following the Stockholm Conference, more than 130 governments established environment departments accompanied by the usual panoply of legislation, environmental impact assessments, training programs and the like.

Yet by the mid-1980s it was clear that the situation had worsened dramatically. The *Global 2000* report to President Carter revealed new information about the extent of threats to the "renewable" resource base of the world -- deforestation, soil loss, desertification, destruction of watersheds, loss of biological diversity, and the deterioration of the marine environment.

In 1987, the World Commission on Environment and Development took this analysis one step further and demonstrated that the deterioration of natural environment is now becoming one of the principal constraints on development.

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4 *Great Lakes: Great Legacy?*; Ottawa and Washington: IRPP and the Conservation Foundation, 1989.

An essentially open economic system is pressing upon an essentially closed ecological system. In the Commission's view, any domestic or international economic policy which ignores the realities of ozone holes, desertification, deforestation and climate change will be doomed to failure.

Brundtland points out that the traditional compartmentalization of government is at odds with the need to integrate the environment and economic decision-making, and with adequate management of ecosystems as a whole. The new reality will require that central economic agencies be made responsible for the environmental consequences of their actions. It will also require that the old approaches to air, land, and water be replaced in favour of new approaches which treat an ecosystem as a whole.

2. Environment / Economy Integration

Even before Mrs. Brundtland and her colleagues had finished their task, the Canadian Council of Resource and Environment Ministers (CCREM) reacted to the challenge they posed. CCREM established the National Task Force on the Environment and the Economy. This group, which included seven ministers, seven chief executive officers (CEOs) of major corporations and trade associations, and a number of representatives from environmental organizations, met several times in 1986 and 1987. The task force recommended that Canada adopt many of the Brundtland recommendations, particularly those related to the integration of environment and economics.

Today, just a little over three years later, the federal government, all provinces and both territories have established Round Tables as recommended by the National Task Force. Most of these Round Tables count economic decision-makers as well as representatives of the environmental community among their members. The Chamber of Commerce has set up regional committees to produce a national report on environment and economy, and the Business Council on National Issues has appointed a committee of CEOs, chaired by the head of IBM Canada, to focus on sustainable development.

The Brundtland Report provides a set of principles to clarify the meaning and implications of sustainable development:

- anticipating and preventing environmental problems;
- making informed decisions that integrate environmental priorities into economic policies and strategies;
- practising full-cost accounting, i.e., incorporating environmental costs into prices;
- living off the interest of natural assets and learning how to do better with less;

- promoting the quality of economic development over quantity or rate of growth.

Of all these principles, the most important involves making economic institutions environmentally responsible and accountable. This major task will require a fundamental re-orientation of certain dominant methods of decision-making in government and industry as well as on the part of the individuals who buy, consume and dispose of the world's goods. The Round Tables have been charged with developing this new agenda for public policy, integrating the environment and the economy.

3. The Green Plan

This integration was also to be the goal of the new federal Green Plan, heralded by then-environment minister Lucien Bouchard as a plan to make Canada the world's most environmentally friendly country by the year 2000. Sustainable development is mentioned frequently throughout both the Green Plan discussion material and the final document released by Mr. de Cotret.

The Green Plan is the first comprehensive federal environmental policy in Canada. With allocated resources of $3-billion over five years, its implementation will have major implications for every sector of Canadian society and can be expected to induce large additional expenditures by industry, governments and individuals. The Green Plan's overall goal is "to secure for current and future generations a safe and healthy environment, and a sound and prosperous economy." Within this overarching goal, the federal government has identified several narrower objectives:

- clean air, water and land;
- the sustainable use of renewable resources;
- the protection of special spaces and species;
- the integrity of the Canadian north;
- global environmental issues;
- environmentally-responsible decision-making;
- environmental emergencies.

The Canadian Green Plan is but one of a series of similar plans instigated over the past year or so. Each of them attempts, with varying degrees of success, to incorporate environmental thinking into overall economic policy. Perhaps the most advanced of them all, that produced by the Netherlands, mandates dramatic changes in Dutch energy consumption and waste production, and substantial new government

expenditures.[5] The British plan is more descriptive in nature and has been criticized in the U.K. press for containing too few proposals for real action. [6] A French plan is still under discussion. [7]

4. International Issues

The increased international interest in the environment and sustainable development is leading to speculation that these issues may begin to drive much of the international political agenda for the rest of the century. The environment emerged as an issue on the international agenda at the Stockholm conference in 1972, and the 1992 conference in Brazil (ECO '92) may well entrench it as a major influence on domestic policy.

This could be especially true for a major natural resource and energy producer like Canada. The Montreal Protocol, with the full agreement of the Canadian government, is already influencing domestic CFC policy. Efforts to arrive at an international climate change convention with binding limits on greenhouse gas emissions could have serious implications for domestic energy policy. The creation of an international fund to help developing countries in the transition away from heavy dependence on fossil fuels could have financial implications for Canada's foreign assistance and energy policies.

Canadian forestry policy could also be affected in two ways. First, attempts to include a carbon protocol in any convention could influence our reforestation rate. And secondly, an international forestry convention could contain a number of provisions that would relate to old growth forests, wilderness preservation, reforestation practices and the like. There is a growing worry that a possibility for a consumer boycott of Canadian timber and newsprint exists because of international reaction to Canada's forestry policy. Such a boycott has already been successfully organized by European environmental groups against tropical timber.

5. Constitutional Change

Division of Powers

Generally, at the international level, jurisdiction for environmental matters lies with the federal government. It is on the national level, and sometimes the bilateral level, that jurisdiction becomes concurrent and therefore controversial. Because "environment" in the Constitution does not fall under any enumerated head of

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5 *National Environmental Policy Plan*. The Hague: Second Chamber of the States General,1989.

6 *This Common Inheritance*; London: HMSO, 1990.

7 "Un Plan National pour l'Environnement". *Environnement Actualité*, Vol 122, sept. 1990.

power (ss. 91 and 92), protection of the environment must be justified indirectly under a variety of related competencies.

The federal government can count upon its express powers and several general powers relating to the national interest, peace, order and good government, interprovincial trade and federal crown lands (including the territories). A province's competence in environmental issues falls primarily within its jurisdiction over property and civil rights, its power to regulate municipalities and its power to enforce valid provincial laws through penal sanctions. These broad powers allow the provinces to regulate the environment on a very practical level, for example: zoning, waste disposal, local commerce and industry, sewers, fresh water treatment, local transportation, air, soil and water quality and governance of the natural resources on provincial crown lands.

It is the areas of express shared jurisdiction, such as agriculture, and those of parallel jurisdiction, such as transboundary air and water pollution, that create conflict. If the goal, however, is the achievement of national standards for pollutants with minimum intrusion upon provincial legislative powers, there are a few flexible solutions.

First, the equivalency provisions of the *Canadian Environmental Protection Act, (CEPA)*, ss. 34 and 63, allow the federal government to set uniform limits for air toxics and international air pollution, while allowing the provinces to promulgate and regulate their own standards if deemed equivalent or better than the national one.

Second, fiscal incentives, such as tax rebates for pollution control equipment, or grants for provincial enforcement of toxics control -- provided by the federal government and tied to the achievement of national objectives – can minimize the role that the federal government needs to play in local attainment of environmental objectives.

Third, national, mandatory standards with provincial responsibility for implementation can sometimes allow for both provincial flexibility and for federal assurance that national goals will be met. This alternative has been successfully implemented in the U.S. under the *Clean Air Act* whereby "State Implementation Plans" are required to meet federal emission standards, on pain of stricter federal regulation of the "non-attainment areas".

And finally, where the federal and provincial governments have been unable to settle differences in areas of shared jurisdiction, such as with motor transportation and the marketing of agricultural products, the delegation of regulatory power to common agencies can resolve jurisdictional conflict.

Jurisdictional conflict may increase in the future as the provinces seek greater control over the environmental issues that affect provincial property and resources. The public may become increasingly impatient with what it perceives to be government inaction masquerading as constitutional posturing on a wide range of environmental threats. As we have seen, the polls reveal that Canadians see the

federal government as bearing far more responsibility for environmental action than the provinces; yet both levels of government receive a poor rating for past accomplishments. National standards with provincial attainment strategies provide for cooperative action and may improve public perception as well as environmental quality, while minimizing intrusion by one level of government upon another. The "Statement of Interjurisdictional Cooperation on Environmental Matters" adopted by the Ministers of the Environment in March 1990 provides a framework for intergovernmental cooperation, and bilateral and multilateral agreements among the jurisdictions. Its goals are the harmonization of standards; management of shared natural resources; and the exchange of environmental information.

CCME has already begun work on national standards for the pulp and paper industry and for the creation of a fund to clean up contaminated sites. The latter, known as the National Contaminated Sites Remediation Program, establishes a 50/50 cost-sharing schedule for federal and provincial clean-up of contaminated orphan sites. Environment Canada has pledged $200-million for clean-up and $50-million for technology development to this remediation program. Canada and British Columbia finalized a $29.2-million cooperative clean-up agreement in November 1990. Similar agreements with five other provinces (New Brunswick, Prince Edward Island, Nova Scotia, Alberta and Ontario) are nearing completion.

Aboriginal Issues

The *Constitution Act 1982* recognizes two sources of aboriginal rights. Treaty rights include rights in land claims agreements. Such rights, as recognized in various treaties mostly negotiated in the 19th century, are usually limited in terms of benefits and powers to native people. In contrast, the three land claims agreements concluded to date have not only conveyed land and harvesting rights , but also rights to participate in the management of wildlife and the environment. However, neither the treaties not the claims convey rights to self-government. Except as specifically provided in particular claims agreements, federal, provincial and territorial laws of general application apply to native peoples who live in treaty and claim settlement areas.

The other source of aboriginal rights is existing aboriginal rights. The nature of these rights, however, is unclear. The First Ministers Conferences, called for by the *Constitution Act 1982*, have failed to define them.

Two recent Supreme Court decisions, *Guerin v. R.* and *R. v. Sparrow*, indicate that native claims to self-governance, as supported by existing aboriginal rights, will be taken seriously by the judiciary. In *Guerin* , the court qualified the relationship of the federal government to native lands as a fiduciary one. The historic powers and responsibility assumed by the Crown over native issues was the source of this fiduciary obligation. In *Sparrow*, the court took this relationship one step further to affirm the primacy of aboriginal rights as defined in Section 35(1) of the *Constitution Act, 1982*, to the extent that Canadian legislation -- federal or provincial -- cannot infringe on these rights in the absence of a two-fold justification. First, is the infringement due to a valid legislative objective, such as conservation and resource management? And if so, then does the infringement respect the special trust

relationship of the Canadian government towards native peoples? The specific issue in *Sparrow* was whether the aboriginal right to fish could be curtailed by federal resource management regulations setting maximum net size for fishing. This infringement on existing native rights was ruled invalid. The decision requires that governments *justify* legislative interference with aboriginal rights. This presumably includes legislation that is *protective* of the environment as well as legislation which promotes development.

Chapter 2

INTERNATIONAL ISSUES

SECTION	SUBJECT	PAGE
	Global Issues	
1.	Ozone Depletion	29
2.	Climate Change	30
3.	Forestry	33
4.	Long Range Transport of Air Pollutants	34
5.	ECO '92	35
6.	Marine Environmental Quality Pollution from Ships Pollution from Land-based Activities	36
7.	Circumpolar Cooperation	38
8.	International Trade	38
	Bilateral Issues	
1.	Acid Rain	39
2.	Air Toxics	40
3.	North American Waterfowl Management Plan	41
4.	The Great Lakes	42

INTERNATIONAL ISSUES

GLOBAL ISSUES

In 1984, the United Nations appointed a commission, chaired by Gro Harlem Brundtland, the Prime Minister of Norway, to examine the relationship between environment and development. The Commission had 23 members from all regions of the world. It was composed largely of people who had held positions of political or economic power in their own countries, many of whom had little or no environmental background. It is therefore remarkable that the Commission produced a unanimous and hard-hitting report: *Our Common Future,* published in 1987.

The Commission began its report by examining the global environmental trends of the 1980s:

1) Each year over six million hectares of productive dryland turns into desert -- over 30 years this would amount to an area roughly the size of Saudi Arabia. At this moment, an area of Africa equal to the size of India is subject to such desertification.

2) The world is losing more than 11 million hectares of tropical forests annually (since the publication of the report, this figure has risen to 17 million). Over three decades this would also equal an area the size of India. Already the Food and Agriculture Organization (FAO) estimates that more than one billion people are suffering a shortage of firewood -- the basic fuel for most of Africa -- because of this deforestation.

3) The use of certain chemicals -- principally of CFCs and halons -- is gradually destroying the earth's ozone shield.

4) Owing to vast increases in the burning of fossil fuels, we have already initiated a series of changes in the world's climate. Scientists from the Intergovernmental Panel on Climate Change estimate that these changes, if left unchecked, could result within the next forty years in temperature increases of 0.3 degrees centigrade per decade, rises in sea levels of up to 1/2 meter and major shifts in world rainfall patterns.

5) Despite some birth control progress in some countries, the world population will inevitably grow to around ten billion -- roughly twice its present size -- and result in huge, unprecedented, claims on resources.

6) The Commission reminds us that this unprecedented growth in human numbers is being accompanied by equally unprecedented increases in

industrial production. It has grown by more than 50 times over the last century. And 80 percent of this growth has occurred since 1950.

7) We have increased our use of fossil fuels, (principally oil and coal) by more than 30 times in the last 100 years. A full three-quarters of this increase has come since 1950.

8) We have produced a huge quantity of man-made chemicals since the war, many of which are now in the environment. In addition, industry produces millions of tonnes of hazardous wastes which must be disposed of safely.

Despite this pessimism over the state of the world's environment, the Commission recognized that a five- to ten-fold expansion is needed in the world economy to meet the minimum needs and aspirations of the 10 billion people who will be on the planet by the middle of the next century.

> Nearly 40 percent of the earth's land-based photosynthetic activity is devoted to the satisfaction of human needs or has been lost as a result of human degradation of natural systems.
>
> -Worldwatch Institute,
> *State of the World, 1990*, p 7

An expansion on this scale is at odds with the environmental observations enumerated above. The growth in energy consumption alone would make the problem of climate change virtually unmanageable. The Commission could have thrown up its hands in despair. Instead, it produced a new and useful concept – sustainable development. In the Commission's own words, sustainable development involves meeting today's needs without seriously endangering the prospects of future generations.

Since the publication of the Commission's report, the issue has moved speedily to the top of the international agenda. The United Nations has begun preparations for a conference on environment and development to be held in Brazil in 1992, the Montreal Protocol on substances which deplete the ozone layer has been strengthened, and preliminary negotiations have begun on climate change, forestry and biological diversity conventions.

1. Ozone Depletion

A classic success story in international cooperation has been the effort to strengthen the Montreal Protocol and thereby protect the ozone layer. The protocol, first negotiated in Montreal in 1987, seemed afterwards to be in trouble. Few countries ratified the document until Mrs. Thatcher convened a meeting in London in the spring of 1989. That meeting, and subsequent meetings in Helsinki, resulted in an increased number of signatories and a significant strengthening of the protocol's provisions. Broadly speaking, the final document ensures that production of CFCs in

developed countries will be phased out by the end of the century, rather than being halved, as was the case in the previous agreement. Two additional substances were also added to the agreement.

The resolution of the issue also called for some form of burden sharing, to ensure that large developing countries, such as India and China, signed the document. These countries have ambitious plans to provide refrigerators to their vast populations -- a goal that is difficult to fault. Why, they reason, should they cut back on their plans or pay a hefty additional price for expensive CFC substitutes?

This led to a proposal, presented at the second London meeting in June of this year, for the creation of a fund to ease the transition away from CFCs in the developing world. The fund, to be established at a level of approximately $100-million per year was initially resisted by the United States, fearing the precedent it might create for a larger fund to deal with global warming. The United States eventually agreed to go along with the fund at a level of $280-million for the first three years. The protocol was strengthened to call for a ban on the production of CFCs by the year 2000 and India and China both indicated their willingness to reconsider their positions and to sign the protocol.

Since the London meeting, progress has been rapid. Agreement has been reached on the establishment of an interim secretariat in Montreal. Mr. de Cotret reports that Canada is well ahead of the revised timetable for phasing out CFCs and a Canadian technical assistance team sent to Malaysia feels that the phase-out in many developing countries may also go more smoothly than expected.

2. Climate Change

The major issue to emerge on the international scene is global warming. Briefly put, global warming results from an increase in the concentration of a number of greenhouse gases (GHGs in international negotiating terms) in the earth's atmosphere. Although media and public attention has focussed on carbon dioxide (CO_2), CFCs and methane are also potent contributors to climate change. With the fourth highest per capita production of such gases (resulting from human activity not natural processes), Canadians have a particularly important responsibility in this problem area. Since land masses at higher latitudes are expected to experience two to three times the level of mean global warming, Canada could be affected to a far greater extent than many other nations.

The issue first appeared on the public agenda at the Toronto Conference on the Changing Atmosphere. The Conference, held in 1988, brought together over 300 scientists, policymakers and representatives of non-governmental organizations (NGOs). Its statement began with the following paragraph:

> Humanity is conducting an unintended, uncontrolled, globally pervasive experiment whose consequences could be second only to a global nuclear war. The Earth's atmosphere is being changed at an unprecedented rate by pollutants resulting from human activities,

> inefficient and wasteful fossil fuel use and the effects of rapid population growth in many regions. These changes represent a major threat to international security and are already having harmful consequences over many parts of the globe.

The Conference called for a reduction in CO_2 emissions by 20 percent by the year 2005. It also called on countries to establish a World Atmosphere Fund to help the developing countries ease their transition from heavy dependence on fossil fuels. The Canadian Ministers of Energy have met twice since the Toronto conference to discuss formally the question of a Canadian commitment to curb CO_2 emissions. CCME is also developing a national action strategy on this subject.

The Intergovernmental Panel on Climate Change (IPCC), a group of the world's leading climate scientists, has concluded that the earth faces significant temperature increases over the next fifty years, perhaps greater than those which have taken place over the last 10,000 years. IPCC also concluded that the sea level in places would rise by one-half a metre. The exact consequences of this warming are unknown, but it and the rapid shift of climate zones will result in major shifts in rainfall patterns, massive flooding in some low-lying countries, increased frequency of tropical storms and unpredictable changes in agriculture and forestry. These shifts would be so rapid that many plant and animal species would not survive.

The IPCC report formed the scientific background for the Second World Climate Conference recently held in Geneva. The Conference agreed to begin negotiations on a binding agreement on climate change next February, with a view to producing a draft for discussion at the United Nations Conference on Environment and Development in Brazil in 1992. An international agreement is likely to take longer to negotiate.

If the international negotiations are to be successful, all developed countries will need to agree to some cuts. The Toronto Conference suggested an interim goal of 20 percent. The IPCC report emphasized the interim nature of even the 20 percent cut, reiterating that a 60-80 percent cut would eventually be necessary to stabilize the levels of CO_2 in the atmosphere. In order to be successful, any climate change convention will need to make special provisions for the developing countries. Commercial energy use in almost all of these countries is at extremely low levels and will need to be raised if these countries are to improve their standards of living. But herein lies a danger. If India and China, for example, pursue their present plans for industrialization, they could add up to 200 additional coal-fired generating stations within the next few decades. The CO_2 emissions from these facilities would likely wipe out any savings realized by the industrialized countries.

This situation has led to calls for a substantial fund to help ease the transition to more efficient forms of energy production and utilization and to enlarge the "carbon sink" contained in the world's tropical forests. The Toronto Conference called for such a fund and the ozone negotiations could provide a precedent. The financial requirements of such a fund would be substantial – an official Dutch Government study puts it at $40- to $60-billion annually.

Although no formal international targets have been set, a number of countries have taken unilateral action.The Federal Republic of Germany has adopted a target of reducing emissions by 25 percent over 1987 levels by the year 2005; the Netherlands has agreed to a freeze by the mid-1990s with a cut of five percent by the year 2000; Denmark and New Zealand will attempt to reduce emissions by 20 percent by 2000. The Canadian position, reaffirmed by the Green Plan, is to freeze emissions at 1990 levels by the year 2000.

Controlling emissions of greenhouse gases has obvious ramifications for a major energy producer like Canada. Although we produce only two percent of the world's emissions of CO_2, we are the largest per capita producer of greenhouse gases in the industrialized world. We are also perhaps the OECD's least efficient consumers of energy per capita and per unit of GNP. Canada is a large and cold country with a large proportion of energy-based primary industries. We are also a large energy exporter. This raises questions of the CO_2 content of exports.

Table 1

INTERNATIONAL COMPARISON
Anthropogenic Additions to the Carbon Dioxide Flux
1987

COUNTRY	THOUSAND TONNES CARBON	CO_2 PER CAPITA
Canada	110,100	4.3
United States	1,243,800	5.0
United Kingdom	156,900	2.8
France	94,200	1.7
West Germany	181,400	3.0
Italy	101,900	1.8
Japan	247,524	2.1
World	8,490,000	1.7

SOURCE: *World Resources Report, 1990-91.* Washington: World Resources Institute

The Green Plan proposes the beginnings of a national strategy for CO_2 limitation. In the absence of these concrete actions to curb emissions, it predicts a 17 percent *increase* in Canadian emissions of CO_2 by the year 2000. The strategy calls for:

1) the introduction of a *National Energy Efficiency and Alternative Energy Act*,to regulate minimum energy efficiency levels and labelling of products to convey information on energy use;

2) updating and regionalizing the national measures for energy conservation in buildings and their incorporation into building codes;

3) the development of fuel efficiency targets for new vehicles;

4) a federal-provincial partnership to develop strategies for reducing CO_2 emissions from transportation;

5) accelerated development and market penetration of alternative transport fuels;

6) increased research and development for new and renewable sources of energy.

According to Mr. de Cotret, this strategy at best will produce about 60 percent of the emission savings required. Governments will then be faced with some of the tougher and more unpalatable alternatives such as carbon taxes, other increases in energy prices, and the potential role of nuclear power as an alternative source of supply.

This debate will soon be conducted in the open during the hearings on Ontario Hydro's long term energy supply and demand strategy. Public funding for intervenors will ensure that all of the alternatives are spelled out in some detail.

In addition to their potential for driving the domestic Canadian energy agenda, the climate change negotiations may have a major effect on Canadian foreign policy. Historically, our foreign assistance policy has concentrated on helping the poorest countries. If this policy turns in the direction of countries with the greatest effect on global change, then many of the poorest countries could be left out in the cold. Eight large developing countries produce over 75 percent of the Third World's emissions of greenhouse gases; funds devoted to climate change will be targeted at them. And relatively few countries account for the vast majority of the earth's remaining tropical forests; assistance in the form of debt swaps and reforestation schemes will clearly be targeted at them.

3. Forestry

Another issue driving the international debate is tropical deforestation and species extinction. Although linked to the climate change discussions through their potential as "carbon sinks", forests (in the opinion of many) also need to be discussed on their own, especially in the light of the recent conclusions by FAO that the rate of deforestation has jumped to 17 million hectares per annum. This argument holds that forests perform a range of functions, providing employment to forest dwellers and loggers, acting as carbon sinks, providing the most diverse ecosystems known to mankind, and supplying a whole range of valuable services from climate moderation to water management. Of all the issues on the agenda, nothing has affected public opinion as much as the realization that the world's main repositories of genetic diversity and untold natural wealth are disappearing at a frightening rate.

This led the G-7 Summit in Houston to propose a world agreement or convention on forestry, to be prepared in time for the 1992 Conference in Brazil. Canada has been one of the most active proponents of the need for such a convention.

The World Resources Institute and a number of United Nations agencies also have been developing a possible convention on biological diversity, ready (it is hoped) for signature at the 1992 meeting.

It is not at all clear how these issues will resolve themselves, but it seems reasonable to assume that we will not have a forestry protocol to the climate convention, a world forestry convention plus a convention on biological diversity by 1992. What is clear, however, is that these are critical issues for Canada, the world's biggest exporter of forest products. What happens at the 1992 Conference and in the negotiations over the respective conventions involving forestry will be of critical importance to that industry.

Canada has excellent credentials to bring to the table. The industry is sophisticated and technologically competent. CIDA, our national aid agency, has long been one of the leading supporters of forestry activities internationally. Its total commitment to international forestry co-operation and related initiatives through all channels is approximately $1-billion. Annual commitment levels are at about $350-million. CIDA has also been a leader in the development of the Tropical Forestry Action Plan, which has succeeded in more than doubling the amount of foreign assistance to forestry in developing countries.

But Canadian influence on the outcome of these critical discussions will be directly related to the outside world's perception of our domestic forestry policies. This perception is very poor at the moment. The criticisms may well be unjustified and overdone: many in the industry maintain that it is reformed and its silviculture practices are improved. But the Canadian public and media do not seem to believe these assertions and the skepticism has spread to other countries. This may well reduce our influence at the international bargaining table and lead to proposals for boycotts of Canadian forest products in European and American markets. Such boycotts have been remarkably successful with other traditional Canadian products. And there is an even stronger precedent: European environmental groups have effectively opposed recent imports of tropical timber.

4. Long Range Transport of Air Pollutants

The long range transport of airborne pollutants (LRTAP) is an issue with an international cause and local effects. Many substances remain in the air to be transported around the world and transformed into threatening substances such as acid rain, oxidants and polycyclic aromatic hydrocarbons. Some gases, such as carbon dioxide and freon are transported throughout the lower atmosphere, while industrial emissions from the Soviet Union and Europe have been found in the Arctic.

Concern for acidic air pollutants led to the 1979 Economic Commission for Europe (ECE) Convention on Long Range Transboundary Air Pollution and a protocol for international monitoring and assessment. In 1985, the ECE was responsible for the Helsinki Protocol which addresses transboundary flows of sulphur dioxide. The Helsinki Protocol was an important international recognition of the trans-boundary transport of toxics and the need to exert international pressure to achieve a remedy. The Protocol commits signatory countries to reduce sulphur dioxide emissions by 30 percent. In 1988, Canada and the United States signed the Protocol, along with other member nations of the UN Economic Commission for Europe, committing to a freeze of nitrous oxide (NOx) emissions at 1987 levels, in addition to the limit on sulphur dioxide. Other provisions of this Protocol include: a commitment to use the best available control technology on new sources; the exchange of information on such control technologies and increased availability of unleaded gasoline in Europe.

In Canada's Green Plan, the federal government states its intention to press for renegotiation of the Helsinki Protocol to include limits on volatile organic compound (VOC) emissions.

The Great Lakes are particularly susceptible to air toxics because of their vast surface area and location in the path of prevailing winds. Several of the major toxins deposited in the Great Lakes are known to biomagnify in the fish and birds of the lakes, posing increased health risk to the humans who consume them. According to a recent study by the Institute for Research on Public Policy and the Conservation Foundation, more than half the toxic substances found in Lake Superior and a number of the other lakes come from airborne sources. For example, DDT, a critical pollutant long banned in North America, is still being deposited in the Great Lakes basin. The origin of this DDT has been attributed to Central and South America. The effects of this long range transport are primarily a worsening of air quality, acidification of lakes, disruption of the food chain and a rising level of nitrates in drinking water.

5. ECO '92

The United Nations Conference on Environment and Development (ECO '92) will be held in Brazil in 1992. In addition to climate change and forestry, the Conference is expected to discuss the full range of environment and development issues.

The discussions so far have centred on the relative weight to be assigned to those issues given high priority by the developed world vis-à-vis those of greatest interest to developing countries. The former tend to favour issues such as climate change, deforestation, the loss of biological diversity and threats to the marine environment. The developing world, on the other hand, senses that the global nature of these issues may finally give them some leverage in a negotiation with the rich countries. They are trying to use that leverage to focus attention on their issues of debt, trade, poverty and the flow of financial resources between North and South.

The Secretary-General of the Conference is a Canadian, Maurice Strong. His strategy at this point is to force the issue up to the highest levels of government. The General

Assembly has approved his plan to have at least part of the Conference devoted to Heads of State or Heads of Governments. This may mean an unprecedented "summit" of up to 100 Presidents and Prime Ministers. Strong also is lobbying to have governments treat this Conference as one whose focus is on economics and economic policy as much as it is on the environment. This is consistent with the philosophy of the Brundtland Commission.

The ECO '92 Conference may well provide a unique opportunity to bring all of these issues together at the Cabinet level and to begin the process of constructing what some have referred to as a global bargain. This bargain would involve trading concessions from the developing world on CO_2 emissions and deforestation for Northern ones on technology transfer, debt relief and the establishment of a fund to help developing countries adopt new energy technologies.

Any Canadian position must first of all come to grips with the questions of technology transfer for low impact energy technology and the establishment of appropriate financial arrangements for the developing countries. Both of these questions fall almost exclusively within federal responsibility and need not necessarily concern the CCME.

Most of the other critical issues will, however, be of interest to the provinces. First, there is the issue of global warming and Canada's position on CO_2 limitations. The negotiations on a World Climate Convention should be at an advanced stage by then, and the issue of CO_2 reduction targets will need to be resolved. Second, the federal government is pushing very hard for the new world forestry convention; many of its provision will be of critical interest to provincial governments. The final convention relates to the preservation of biological diversity and is bound to contain provisions related to the management and preservation of old growth forests, and to the creation of new parks and protected areas.

Our domestic policies on energy and forestry and a host of other natural resources could be affected, along with our international competitiveness. In formulating the Canadian position for UNCED, the federal government will be looking to the provinces for advice in areas of provincial competence. A very active committee of national development and environmental NGOs has already been established and is pressing for an elaborate public consultation exercise to develop the Canadian National Report for UNCED, one of the key documents in the process. It is even possible that this consultation exercise could involve the NGOs and the House of Commons Committee on the Environment as a kind of Royal Commission.

6. Marine Environmental Quality

Pollution from Ships

The chairman of the Public Review Panel on Tanker Safety and Marine Spills Response Capability noted in his report how "shocked the panel was by the extent to which our coastal and inland waters are polluted". The panel found that each year Canada can expect over 100 small oil spills, about ten moderate spills, and at least

one major spill. A catastrophic spill (over 10,000 tonnes) can be expected once every 15 years. In environmentally sensitive areas (Arctic and many coastal regions) even a small spill could be disastrous. Liver disease found in marine mammals caught off Tuktoyaktuk seems to be correlated with high levels of contaminants in the area. The chairman stated that "a major spill in these areas would be one of the greatest environmental catastrophes this country has ever seen.

The Panel also found that over 350 chemical spills occur in Canadian waters every year. The environmental and health hazards they pose are largely unknown and, where clean-up is possible, they often cost ten times as much, and take five times as long to clean as oil spills. The Panel concluded that "the capacity to respond effectively to a spill of any significant magnitude does not presently exist anywhere in Canada." Although prevention of spills should be the first priority, the Panel recognized that not all spills could be prevented. The Panel therefore recommended that Canada's spill response capability be vastly improved.

Of more immediate importance, the Panel found that a much greater volume of oil enters the marine environment as a result of routine tanker operations (loading and offloading, tank washing, and wastewater discharges) than accidents, and almost all of those operational spills can be avoided, with comparably insignificant costs to industry and government. As well, foreign tankers were found to pose a greater threat to our shores than domestic tankers. Almost one-quarter of the foreign tankers inspected by the Canadian Coast Guard in the Atlantic region were found to be defective.

Ocean dumping is another source of pollution from ships. Canada is not involved in the large scale dumping of industrial waste and sewage sludge that the London Dumping Convention is intended to control, but wastes dumped off other nations' shores can contaminate Canadian waters. It is important therefore for Canada to continue to be a strong proponent of such international controls.

Pollution from Land-based Activities

Canadians contribute many pollutants into our coastal waters from land-based activities. We discharge biodegradable pollutants, such as raw sewage and food processing wastes, that reduce oxygen levels. We use large quantities of chemical fertilizers and pesticides on our cropland. These chemicals can wash into waterbodies, degrading the ecosystem and contaminating the food chain. We also discharge smaller quantities of more toxic chemicals into our waterways, which are immediately lethal and/or accumulate in the food chain, causing cancers and reproductive failure in fish, birds, and mammals. Pollutants discharged into inland waterways travel downstream to eventually pour into the sea. Scientists have found levels of persistent chemicals in the flesh of resident Beluga whales high enough to qualify these animals as hazardous waste.

Progress in this area awaits progress on the issue of sewage disposal plants, mentioned later in this report. The Green Plan contains measures affecting two of the major rivers in Canada which enter coastal waters -- the St. Lawrence and the

Fraser. And a previous collaborative agreement between Ottawa and Nova Scotia is designed to help clean up Halifax harbour.

7. Circumpolar Cooperation

> If you look at the Arctic Ocean on a circumpolar map, you will see that it is really an international lake. All of us have an obligation to ensure that this international lake is protected. I suggest that we should not, in Canada, engage in noisy assertions of sovereignty. Sovereignty should not define our policy. I urge instead that we take the lead in introducing proposals for circumpolar cooperation.[8]

The circumpolar Arctic has become a depository for contaminants and hazardous wastes from the industrial world. Dangerous levels of toxins, including PCBs, dioxins, pesticides and heavy metals, are found in the Arctic food chain. The Canadian north alone contains over 800 sites in which there are hazardous or dangerous materials. There is mounting concern over industrial development in northern watersheds and offshore areas.

In response, the federal government will shortly announce its domestic Arctic Environmental Strategy, a five year initiative which, according to Canada's Green Plan, is intended to achieve sustainable development in the Canadian Arctic. The major elements of the Strategy include dealing with Arctic contaminants, managing waste in the north, improving northern water quality, expanding research and information services, integrating environmental and economic issues, and protecting Arctic ecosystems.

Over the past year and a half, Canada and the other circumpolar countries, have been working toward an international Arctic Environmental Protection Strategy, a process initiated by Finland. The priority items for international consideration include heavy metals, chlorinated organics, radioactivity, oil pollution, acidification of Arctic regions, underwater noise, and monitoring.[9] It is expected that an international agreement will be signed sometime this year.

8. International Trade

In an increasingly interdependent world, no country's environmental policy can remain too far out of step with that of its major trading partners without imposing economic costs. This argument has been used to oppose unilateral Canadian action on a variety of environmental issues, including a CO_2 emission reduction program.

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[8] The Hon. Thomas R. Berger, "The North as Frontier and Homeland", in *The Arctic, Choices for Peace and Security*, True North Strong and Free Inquiry Society, Edmonton, 1989.

[9] External Affairs and International Trade Canada, *Protecting the Arctic Environment*, Report on the Yellowknife Preparatory Meeting, Ottawa, 1990.

It should be noted that Canada has already suffered some consequences of an international perception of its resource management practices as being environmentally unsound: the European Community's ban on the importation of seal pelts, the international anti-fur campaign, the softwood lumber and East Coast lobster disputes with the United States are examples of trade actions taken by foreigners against Canada at least in part for environmental reasons. Without passing judgement on the merits of any of these actions, the views of Canada's trading partners can be expected increasingly to influence Canadian environmental policy. Areas where Canada is potentially vulnerable include the James Bay II development and forestry practices.

BILATERAL ISSUES

1. Acid Rain

In Canada, the effects of acid rain have damaged approximately 150,000 lakes, with 14,000 already considered "dead". Increased acidity in precipitation can also make other components such as aluminium, copper and mercury in untreated water even more toxic. More than 15 million hectares of forestland receive high levels of acid precipitation. An increase in human respiratory problems is also attributed to acid rain. Estimates place the annual costs of acid rain to the Canadian economy at a minimum of $1-billion per year.

In 1979, Canada and the U.S. signed a Memorandum of Intent concerning Transboundary Air Pollution. Although the scope of the Memorandum covers all air toxics, to date, the area of concentration has been the precursors to acid rain. Another vehicle for bilateral cooperation in this area is the Great Lakes Water Quality Agreement. The Great Lakes region has suffered the harmful effects of acid rain and the infrastructure established under this Agreement favours joint research and negotiation.

In 1985, the Canadian government created the "Canadian Acid Rain Control Program" to cut emissions of nitrogen and sulphur oxides. Under agreements between the federal government, the seven eastern provinces and industry, the goal for reducing emissions is currently to get sulphur dioxide emissions back to 1980 levels by 1994. Under these agreements, each province is to implement abatement programs with targets and schedules for local industries. The costs of research and development and implementation of cleaner technology are shared between the federal and provincial governments. Already, emissions have dropped by 40 percent and it appears that the 1994 target will be met. Due to public pressure, this emissions reduction goal may become permanent. The Green Plan commits Canada to cap its acid rain-related emissions in eastern Canada beyond 1994 through extended federal-provincial acid rain control agreements. In addition, the government will expand the Control Program to establish a national emission cap for the year 2000. The

CCME has already agreed to establish such a cap at 3.2 million tonnes for sulphur dioxide in the year 2000.

The most recent progress in the United States is the 1990 amendment to the *Clean Air Act*. This amendment establishes a single national cap on all sulphur and nitrogen oxide emissions, reducing present emissions by about half. This 10-million tonne reduction is to be achieved by the year 2000 through enhanced enforcement powers, larger penalties and the creation of a national market for trading certificates which permit energy-generating utilities to emit SO_2 and NOx. The market mechanism of the *Clean Air Act* amendment is discussed in the environment-economy integration chapter of the next section. Cleaner gasoline will be required in the nine U.S. cities with the worst ozone pollution, by 1995. Auto manufacturers will be required to reduce tailpipe emissions of NOx by 60 percent for 40 percent of the vehicles sold by 1994 and for 100 percent of vehicles sold by 1998. The implementation of these amendments will have a positive effect on the Canadian environment. A federal study has estimated that the proposed reductions in SO_2 emissions, however, will only allow about nine percent of acidified lakes to recover.

2. Air Toxics

Because of the amount of attention that acid rain has received in North America, other forms of transboundary air toxics have not received their proper share of attention. Unfortunately, these other toxic and oxidant air pollutants pose an equally serious threat to human health and ecological welfare. Toxic air pollution includes oxides of nitrogen (NOx), sulphur and carbon, particulate matter and volatile organic compounds (VOCs). Many of these chemicals share two characteristics which make their emission in even small quantities a matter for bilateral concern: persistence in the environment and bioaccumulation in the food chain.

In the U.S., national emission standards have been set for oxides of sulphur and nitrogen, lead, VOCs, suspended particulate matter and carbon monoxide. The U.S. *Clean Air Act* creates a single program for the control of all these substances, defined as "hazardous" under the *Act*. These standards are then implemented by state programs.

In Canada, toxic air pollutants are regulated by the *Canadian Environmental Protection Act*. Substances on *CEPA*'s Priority Substances List can be controlled by regulations issued under the Act. Unfortunately the common toxics of urban and industrial air pollution do not appear on the list. However, the Green Plan contains a commitment to implement the ten-year federal/provinical management plan, adopted by CCME in 1988, to reduce NOx and VOC emissions in problem areas by 40 percent by the year 2000. The federal Ministers of Transport and the Environment have announced that all autos sold in Canada would have to comply with the hydrocarbon, CO_2 and NOx standards set by the California Air Resources Board by 1994. The federal government also commits itself to negotiate specific emission reduction obligations with the U.S. under the Transboundary Air Quality

Agreement. Although this agreement is still in the negotiation stage, it is hoped that it will come into force by 1992.

3. North American Waterfowl Management Plan (Wetland Conservation)

Millions of hectares of North American wetlands have been drained for agricultural purposes or to make room for industrial and urban expansion. Biological diversity has been greatly reduced by upsets to biological cycles and the elimination of habitat for hundreds of wetland-dependent plant and animal species, some of which are now threatened with extinction. As a consequence, natural groundwater purification and flood control systems have also been disrupted thus contributing to a growing crisis in water quality. Steeply declining populations of waterfowl have diminished recreational opportunities for bird-watching and hunting, the latter a $2-billion enterprise in Canada and the United States. Total economic benefits of Canada's wetlands are estimated to be in excess of $10-billion each year. Previous attempts to ensure the protection of these valuable wetland ecosystems have met only limited success.

Most regions of Canada, as well as parts of the United States, contain an abundance and diversity of wetland ecosystems. Wetland basins collect and store runoff, thereby replenishing aquifers and ground water needed to sustain natural vegetation, crops and wildlife. Wetlands play a role in purification of water supplies, prevent soil erosion, moderate regional impacts of droughts and floods, and provide habitat for 37 species of waterfowl as well as many other species.

Since the early part of the 20th century, large scale alteration of the wetland base has occurred through widespread drainage for agricultural purposes, urbanization, and various industrial activities. The most apparent effect of these wetland losses has been a long term decline in some important waterfowl populations. This was a major factor which led to the *Convention for the Protection of Migratory Birds*, established between the United States and Canada in 1916 to ensure the conservation of migratory birds.

The Convention provides the basic foundation for cooperative waterfowl management programs within, and between, the two countries. Although the majority of such programs were concerned with population and harvest management, the focus gradually broadened to include measures for the protection and enhancement of the remaining wetland habitats.

The 1986 North American Waterfowl Management Plan (NAWMP), co-signed by the Minister of the Environment for Canada and the Secretary of the Interior of the United States, brings together international teams of federal, provincial, territorial and state agencies, and private conservation organizations and individuals. The Plan currently extends to the year 2000 when 2.4 million hectares of quality waterfowl habitat (with a minimum of 1.5 million hectares located in Canada) should be protected. This would assure 1970 production levels of ducks, geese, and swans. To date, only five percent of these wetlands have come under the protection of the NAWMP.

Financial requirements to meet these objectives are considerable. The U.S. government, through the *North American Wetlands Conservation Act (1989)*, has undertaken to direct up to $30 million of federal funds annually to North American wetland conservation projects. The Canadian government dedicated $30-million over a five-year period ($6-million per year, 1989-94). This fund is to be matched by provincial and territorial contributions, and then matched again by such conservation organizations as Wildlife Habitat Canada and Ducks Unlimited.

4. The Great Lakes

In spite of all the attention, Great Lakes pollution problems persist. This vital freshwater bioregion is home to 35 million people in Canada and the United States and provides drinking water for two-thirds of them. The latest comprehensive study conducted by the Institute for Research on Public Policy (IRPP) and the U.S. Conservation Foundation, the *State of the Environment of the Great Lakes,* details serious and growing problems.

The problem is in two parts. First, historic deposition of persistent pollutants like PCBs and heavy metals such as lead, clog the ecosystems of many areas of the Great Lakes. Windermere Basin in Hamilton Harbour and the St. Clair River downstream from Detroit and Windsor are two examples. Second, ongoing current-day depositions continue to threaten the lakes' water quality with both biological and toxic chemical pollutants. These include the mixed biological and chemical discharges from the Ashbridge Bay Sewage Treatment Plant in Toronto and chemical plant discharges to Saginaw Bay, Michigan.

In addition to the point source discharges, there are non-point source discharges involving farmland run-off containing chemical fertilizers and pesticides, and chemical and biological leachate migrating from abandoned dumps. Toxic fallout from the industries in and beyond the Great Lakes basin adds tens of thousands of tonnes of chemicals and heavy metals to the lakes from the air. One International Joint Commission study estimated 64,000 tonnes of toxics and heavy metals fall on Lake Ontario annually. One of the major sources of PCBs and certain pesticides in the Great Lakes is toxic fallout.

There have been some successes in cleaning up the discharges to the Great Lakes. Lake Erie was brought back from the brink of death. Eutrophication processes starving the lake of its life-giving oxygen were reversed. A major program in the 1960s and 1970s to reduce biological discharges met success.

For the whole of the Great Lakes, over $10-billion has been spent by the United States and Canada on building and improving municipal sewage treatment plants. But this expenditure has been insufficient to keep up with the industrial growth in the region and the discovery that many chemical discharges are just as harmful and need to be eliminated. The connecting river hotspots will again be a major focus, in particular the Niagara River with its historic toxic waste sites and the St. Clair River which is the recipient of millions of gallons of wastewater from Canada's Chemical

Valley in and around Sarnia. A four-party accord was signed between Canada, the U.S., New York State and the Province of Ontario to clean up the Niagara River. Special attention was paid to the river because of the "Hooker Chemical" (now owned by Occidental) toxic waste dumps and other toxic waste discharges to the river. The Accord set a goal of 50 percent reduction by 1994.

Canada and the United States signed the Great Lakes Water Quality Agreement in 1978 calling for a goal of "zero discharge". Under the Agreement, a Great Lakes Water Quality Board was established. It identified 11 "critical pollutants" that are known to be highly toxic, persistent and bioaccumulate to levels that can threaten human health and the aquatic system.

The Board also identified 42 "Areas of Concern" in specific locations around the Great Lakes, requiring primary focus of attention. Remedial Action Plans (RAPs) are being developed for them, involving federal, state, provincial and municipal governments, as well as the public. The RAPs will include strategies for cleaning up existing polluted sediments and bays and for addressing major sources of discharge.

Ontario's MISA (Municipal-Industrial Strategy for Abatement) program, launched in 1987, is designed to virtually eliminate the discharge of persistent toxics into the Great Lakes and other provincial waterways. The new government in Ontario has expressed its intention to speed up the process of achieving "zero discharge" by the year 2000.

In Quebec, the federal government has offered funds to help that province undertake an ambitious program for drastically reducing discharges into the St. Lawrence River. Among the key issues there is the survival of the river's Beluga whales. The whales have become so polluted that their carcasses have to be disposed of in toxic landfill sites.

Also the Great Lakes Governors and Premiers are exploring measures to fund a new Pollution Prevention Centre for the Great Lakes. It will join other Great Lakes focussed groups such as Great Lakes United and the Great Lakes Institute in trying to clean up North America's largest freshwater lake system.

Chapter 3

NATIONAL ISSUES

SECTION	SUBJECT	PAGE
	Improved Decision-Making	
1.	Accountability	44
2.	Environment / Economy Integration	50
3.	Policy Instruments	52
4.	Environmental Reporting	59
	Environmental Protection and Rehabilitation	
1.	The Ecosystem Approach	62
2.	Air Issues	68
3.	Water Issues	71
4.	Land Issues	76
5.	Emergency Preparedness	81
6.	Scientific Research	82
	Renewable Resource Management	
1.	Forestry	83
2.	Parks and Protected Areas	85
3.	Biodiversity	87
4.	Agriculture	88
5.	Fishery	90
	Energy	
1.	Energy Conservation	92
2.	Nuclear Power Generation	94
3.	Frontier Oil and Gas Development	96

NATIONAL ISSUES

IMPROVED DECISION-MAKING

Environmentally-sound decision-making must ensure that the health of the ecosystem is maintained and, where necessary, restored, for the use of present and future generations. The need to consider environmental factors explicitly in the decisions governments, businesses and individuals make was one of the main recommendations of the Brundtland Report. The National Task Force on Environment and Economy made improved decision-making the key theme of its report. The federal government's Green Plan makes it one of its priorities as well, allocating a quarter of its budget to environmentally-sound decision-making.

All levels of government have recently taken initiatives in the areas of internal organization, planning processes, public consultation and project assessment to integrate environmental considerations more effectively in their decision-making. Manitoba likely has been more thorough than most in this regard but several other jurisdictions can also point to the establishment of Cabinet or senior-level committees to promote sustainable development. Comparable examples can be cited in the private sector, where codes of ethics, environmental audits, and the liability of senior decision-makers for environmental harm are becoming increasingly prevalent.

In the last few years, the focus of environmental policy has shifted from a preoccupation over remedying the effects of environmental degradation – which often proves to be prohibitively expensive – to a concern for anticipating and preventing their causes. These causes are often bound to the decision-making processes behind them. The elements of improved decision-making include an ecosystem approach (this element is developed further in the section on Environmental Protection), accountability, environment/ economy integration, the application of new policy instruments and improved environmental information.

1. Accountability

Accountability is emerging as one of the key environmental issues of the 1990s. Many of the institutional reforms which are the subject of public debate have increased accountability as a common theme: this is true of environmental assessment, the enactment of environmental bills of rights, the creation of more opportunities for public input in decision-making, the establishment of an environmental auditor and the development of environmental indicators.

Low confidence in government and large corporations is at the root of the rising public concern over accountability. As the public becomes increasingly concerned about the economic and health costs of environmental degradation, it will demand a

more thorough accounting by both government and the private sector of the actions they take to protect and restore environmental quality.

Governmental accountability over environmental issues is muddled by a division in federal-provincial responsibilities which does not correspond to ecological principles. The Canadian public has been confused by the resulting jurisdictional overlap. The essence of ecosystem management -- reconciling the fundamental incongruity between political and ecological boundaries and transcending the parochial tendencies of individual jurisdictions in favour of advancing the common good -- represents a formidable institutional challenge.

This overview of environmental accountability covers the following issues: environmental assessment, the creation of an environmental auditor, public consultation, environmental bills of rights, and aboriginal aspirations.

Environmental assessment

> The objective of environmental assessment is to promote the integration of environmental considerations as a primary part of all social and economic decision-making for the short- and long-term benefit of society through an open, participatory and consistent process.
>
> *-Canadian Environmental Advisory Council, 1988*

Environmental assessment has become a lightning rod for all stakeholders in environmental policy. Environmental groups lobby for a rigorous application of the process; industry worries about uncertainty and the potential for costly delay; provincial governments try to protect their jurisdiction from perceived federal encroachment; the federal government is concerned about losing control over its process to the courts. It will continue to be a very high profile issue, in part because its application remains one of the most visible manifestations of the extent of governments' commitment to the environment. Furthermore, the application of the process provides an endless series of platforms for confrontation.

Every province now has a legislated environmental assessment process. Ontario, Saskatchewan and Alberta are reviewing their process while the Yukon is formulating a Development Assessment Process. At the federal level, Parliament is reviewing a bill (C-78) to reform the current environmental assessment and review process. In early 1991, the fate of this bill is uncertain: several of its provisions have been severely criticized by environmental groups; the provincial environment ministers (except Quebec's) have proposed amendments to the bill designed to reduce overlap between the federal and provincial processes. In addition, several court cases are pending regarding the existing federal review process (related to dam construction in three provinces and pulp and paper mill development). Their outcome may well influence the ultimate design of federal environmental assessment.

Although most political and media attention is likely to focus on seemingly isolated *causes célèbres* (such as Rafferty-Alameda, Oldman, James Bay II so far; in the next few years, pulp and paper mills, waste disposal), these are in fact the outward manifestation of more fundamental issues which cut across all these projects. These issues include:

- the scope of process. Issues related to scope are particularly difficult and involve the range of permissible exclusions; the definition of the word "environment": is it biophysical only or should it also include socio-economic considerations?; and the application of the process: should it just involve physical projects or government initiatives and proposals too?. The federal government's commitment to assessing major cabinet policies for their environmental effects may put pressure on the provincial governments to follow suit.

- auditing and monitoring process. How adequate are the checks and balances in self-assessment? Is an independent oversight, such as an environmental auditor needed?

- public review. Issues include intervenor funding, independence of panel, hearing procedures (cross-examination, subpoena of witnesses). To what extent are alternative forms of conflict resolution, such as mediation, possible?

- interjurisdictional cooperation. How is overlap reduced and areas of jurisdiction protected while meeting public demands for effective assessment?

Environmental Auditor

The idea that an independent environmental auditor should be established to oversee the implementation of the federal government's environmental decision-making process has gained considerable currency in the last two years. Such a position would reassure the public that the on-going self-monitoring and review process which characterizes the administration of environmental assessment in Canada is not being abused. The establishment of an environmental auditor has been advocated by, among others:

- a coalition of 28 environmental and aboriginal organizations in *A Greenprint for Canada*;

- the National Round Table on Environment and Economy;

- the House of Commons Standing Committee on Environment.

As an alternative, it has been suggested that existing auditors general could assume these responsibilities. The Auditor General of Canada may indeed already be positioning himself to start filling this role. In his 1990 annual report, Mr Dye notes

that environmental protection is "a prime example of the need for accountability" and lists six areas of reporting which his office will monitor in coming years.

Public Consultation

Fuelled by mistrust, public expectations about the appropriate forms of consultation are rising faster than governments' ability to deliver. This is true even though governments engage in more consultation than ever before. To confuse the issue further, the public often sends conflicting signals: it wants both forceful government leadership on the environment (often implying immediate action) and to be consulted in advance on such actions. The public is increasingly rejecting the model of "executive federalism". This issue transcends the environmental policy field and is a symptom of a much deeper discomfort with the way in which our democratic institutions have evolved (*viz.*, the almost universal condemnation of the constitutional process). It is important to point out that, whereas environmental stakeholders will mostly disagree on substantive issues, their differences are largely bridged on process issues such as consultation and access to information.

As a result of rising expectations, governments face a ratcheting effect: the previous "good" consultation process becomes the minimum standard for the next one. Several successful multistakeholder consultations (e.g., Niagara Process, Energy Options) are widely touted as models for future consultation processes. But it is important to note that consultation may increase conflict and lead to public frustration where issues are polarized (e.g., nuclear power) or where the government is unprepared to meet public expectations. In the Green Plan, the federal government committed itself to reviewing the public consultation process on environmental issues. CCME is also reviewing its public consultation practice.

The public is becoming more sophisticated and is better able to participate than ever before. This is true both for the general public which is spawning a large number of environmental organizations to represent it in various causes and for industry which as a result of its growing interest in the issue is learning how to participate more effectively in public debates.

The consultation "load" will increase rapidly in the next few years. The federal government is already committed to a series of consultations as a result of *CEPA* and the Green Plan. The Round Tables will hold their own (Manitoba, New Brunswick and Ontario are already in various stages of public consultation on sustainable strategies). This trend raises a series of questions: how will the government derive maximum value from these consultations? how can the public and stakeholders make the most effective contribution? how should consultation processes be "matched" to the kind of advice sought? how can overload, consultation "fatigue" and cynicism be prevented?

In a related vein, it is likely over the next few years that governments will no longer unilaterally set the consultation agenda. The private sector is increasingly conducting its own consultations (*viz.*, the Canadian Petroleum Association's well-received guidelines for public consultation). As formal and informal channels of

communication between environmental groups and business grow, government's latitude in deciding how and on what to consult may diminish.

Environmental Bills of Rights

An alternative to direct government regulation of polluters is the "environmental bill of rights". These bills come in the form of legislation enabling the *individual*, rather than the state, to enforce environmental laws. The operative provision of this legislation is its lowering of the traditional barrier to such enforcement – standing, which resides exclusively with the state under its *parens patriae* jurisdiction unless the individual can prove special and distinct damages. Such a bill of rights does not go as far as to allow individuals to sue for general common and civil law remedies like nuisance. It does, however, provide an additional mechanism by which statutory remedies can be enforced. Although there is no indication that the 1990s will see a lessening of government enforcement of environmental harm, one can also expect to see an increase in the number of private suits.

Other important components of such legislation are the provision of compensatory damages for general harm to the environment; protection from discrimination for public servants who disclose environmental violations of their employers; public access to government information; and the office of an environmental auditor or ombudsman with a broad mandate to investigate and advise on the performance of agencies, management strategies and legislation and to provide access to information.

One such bill of rights was enacted in New Jersey as early as 1974. The operative provision of the *Act* reads,

> Any person may maintain an action in a court of competent jurisdiction against any other person to enforce or to restrain the violation of any statute, regulation or ordinance which is designed to prevent or minimize pollution, impairment or destruction of the environment.

The Northwest Territories has recently adopted an *Environmental Rights Act* (1990) which similarly grants "every person the right to protect the environment ... from the release of contaminants by commencing an action in the Supreme Court". The bill defines "contaminant" very broadly to include "any solid, liquid, gas, heat, sound or vibration" which impairs the quality of the environment or adversely effects human health or comfort. It expressly provides for access to information as a corollary to public interest in and prosecution of environmental offenses.

Quebec does not have a distinct environmental bill of rights, but the *Environment Quality Act*, articles 19.1 and 19.2, grants standing to individuals to sue for violations of that *Act* causing injury to the plaintiff. The *Act* does not grant standing to individuals to sue for clean-up or remedial work, nor does it grant standing to sue for violations of any other environmental legislation.

For its part, the Ontario government has announced its intention to table an environmental bill of rights in the provincial legislature in the spring of 1991 following consultations with stakeholders. This bill is to be based on the following principles:

- the public's right to a healthy environment;
- the enforcement of this right through improved access to the courts and/or tribunals including the right to sue polluters;
- increased public participation in environmental decision-making;
- increased government responsibility and accountability for the environment;
- greater protection for employees who "blow the whistle" on polluting employers.

Aboriginal Rights over Resources

The aboriginal claim to self-government over natural resources is two-fold. On the one hand, aboriginal groups seek a share of the revenue from mining, forestry and oil drilling on lands that the native peoples regard as their own. On the other, they have their own views and values regarding environmental protection, which may conflict with those held by other Canadians. In considering native involvement in environmental management, a distinction should be made between management powers native people have over their own lands and the powers they have or claim beyond their boundaries. This is important because traditional native lands and the lands which many native people still harvest are often more extensive than the lands which they actually own. It is also important because development on land adjacent to native lands can raise major problems for native people.

Models for involving native people in environmental management exist. Two Indian groups have negotiated non-constitutional self-government powers, including environmental management powers, outside of the context of the *Indian Act*. Indians in northern Quebec fall under the *Cree-Naskapi Act*. The *Act* empowers the Indian band to legislate on access and residence for native lands; zoning and land use planning; expropriation of lands for community purposes; regulation of buildings, parks and recreation; protection of the environment including natural resources; regulation of hunting, trapping and fishing, and regulation of transportation.

In British Columbia, the Sechelt Indian Band falls under the *Sechelt Indian Band Self-Government Act*. The Band Council may make laws respecting the preservation and management of natural resources and fur-bearing animals, fish and game on Sechelt lands. In addition, by federal and provincial agreement the Band may be granted management powers outside reserve lands via the creation of a "Sechelt Indian Government District".

Claims settlements have resulted in a variety of joint Canadian-native arrangements which project native management powers beyond native lands. For example, Section 22 of the *James Bay and Northern Quebec Agreement* establishes a body, appointed by the Cree, Canada and Quebec, which has environmental management powers for extensive parts of northern Quebec. The *Inuvialuit Final Agreement* establishes a joint council to advise government on matters relating to wildlife habitat and harvesting in the Western Arctic. The agreements-in-principle reached with the Council for Yukon Indians and the Inuit of the Central and Eastern Arctic are more far-reaching still in establishing joint decision-making boards over many aspects of renewable resource management. These agreements, which explicitly endorse the concept of sustainable development, can be expected to influence aboriginal demands in other regions of Canada where comprehensive claims are still outstanding.

It will be noted that the models referred to apply mostly to native people living on, or beyond, the development frontier. Those living in densely populated, industrialized areas, such as the Mohawk near Montreal, the Walpole Island Band of Lake St. Clair, and the Musqueam of greater Vancouver present different problems and would probably require different management arrangements.

In September, 1990, Prime Minister Mulroney announced a new "Indian agenda" which is to have four aspects: land claims, the economic and social conditions on reserves, the relations between aboriginal peoples and governments, and concerns of aboriginal peoples in contemporary Canadian life. On land claims, there would be three parallel initiatives: the acceleration of the settlement of specific claims, the honouring of legal undertakings regarding land transfers to treaty Indians, and the acceleration of negotiations on comprehensive claims. The government will no longer limit itself to handling six claims at any one time, and will consider other innovations such as regional and province-wide negotiations.

2. Environment /Economy Integration

Changes in Government Decision-making

The transition to sustainable development requires an "alternative" or "sustainable development" agenda. It should embrace all of the issues that have long been thought of as simply environmental, natural resource or urban issues, but integrate them with the dominant issues of growth, development, employment, and energy. It should shift attention to the entire development cycle, viewing environmental degradation from the perspective of its common sources in the policies, programs and budgets that drive development. It should lead to action on the sources of the issues in human activities; in the policies, attitudes and behaviour patterns underlying these activities; and in institutions and the forms and processes of decision-making. There is also growing agreement that it must lead to making the major spending agencies of government more responsible for anticipating and preventing the environmental consequences of their spending decisions.

This issue will never attain high public visibility but is of fundamental importance. The Brundtland Commission flagged it in recommending that "environmental protection and sustainable development must be an integral part of the mandates of all agencies of governments...". For its part, the National Task Force on Environment and Economy made several recommendations designed to change the way in which the government makes decisions:

1) more research into market based incentives for sustainable development by universities, the private sector and government organizations such as the Economic Council and Statistics Canada;

2) cabinet documents and major government economic development documents should demonstrate that they are both economically and environmentally sound;

3) the establishment of formal mechanisms to hold all Ministers and their departments accountable for promoting environmentally sound development;

4) Environment Ministers to become members of key economic development and priorities and planning committees of cabinet;

5) CCREM to provide a forum for continued harmonization of environmental standards and legislation and the streamlining of environmental assessment across Canada;

6) the establishment of a number of procedures to ensure that all Ministers become directly responsible and accountable for the environmental and economic consequences of their policies, legislation and programs;

7) for industry to take up the challenge of sustainable development by supporting environmental assessment as an integral part of the decision-making process, adopting environmental principles and codes of conduct and the preparation of annual reviews of environmental performance for their boards of directors;

8) provincial and territorial governments to have conservation strategies in place by 1992 and for a national strategy to be ready for ECO '92;

9) for each territory and province to establish a Round Table on the Environment and the Economy.

While all governments across Canada have taken steps to implement these recommendations, progress across the country in achieving these standards is uneven.

Round Tables on Environment and Economy

The provinces, territories and the federal government have all established Round Tables on Environment and Economy in response to the National Task Force recommendation. On the whole, the Round Tables have remained true to their original mandates and the recommendations for their composition. They all have a number of senior private sector representatives. They all have a number of representatives from the environmental community. All, save B.C., have a number of government representatives, and the B.C. group contains senior public servants.

Some have embarked upon elaborate consultative exercises. New Brunswick organized a series of public discussions leading to the preparation of its sustainable development strategy. British Columbia held in excess of 22 Round Table meetings and workshops in 1990 alone. The Manitoba Round Table has now produced a draft sustainable development strategy which will be the subject of a major public consultation exercise in 1991. Ontario has produced a Challenge Paper to set the agenda for its sustainable development strategy and has also established a number of sectoral task forces which will hold public consultations to prepare inputs for the strategy.

The social experiment which the Round Tables represent is still inconclusive. None has yet gone through the hard choices necessary to integrate environment and economics in the form of a sustainable development strategy. None has yet presented a report to its government that requires immediate action. The federal government has announced no plans for a national strategy and the National Round Table also has not expressed an intention of producing one although it will initiate a series of "dialogues" among stakeholders in various economic sectors. The value of this experiment, however, will become clear very soon. Over the next two years, most provincial governments will have to react to the conservation or sustainable development strategies which the Round Tables are preparing.

3. Policy Instruments

Environmental policy in North America has been dominated by the traditional "command and control" approach to regulation. At one extreme, this approach not only can mandate and set standards, but also the technology which must be used to achieve these standards. This approach is characterized by phrases such as "best available technology" or "best practicable technology". At the other extreme, this approach may be used in combination with other instruments. But typically, it still sets fairly inflexible standards without reference to the firm's ability to adjust or develop new technologies. The command and control approach has very real political advantages, especially in an age of public concern with the environment. It appears simple, it treats everyone the same way (unless an excessive amount of "grandfathering" is involved), and it is often combined with pledges to punish polluters severely. It may also be popular with some segments of industry who see it as predictable.

Recently, this approach has come under criticism. Part of this critique comes from the Brundtland Commission and the National Task Force. They point out that command and control is almost exclusively designed to cure environmental problems once they occur and is not an optimal tool for pollution prevention. Other critics point out that it stifles the development of new and imaginative technologies, especially where regulations actually specify engineering details.

This has all led to a spate of new writings and some experimentation, especially in Western Europe, with several new techniques for measuring ecological capital, pollution taxes, emissions permits and the privatization of common property resources. The Organization for Economic Cooperation and Development (OECD) has actively been developing new approaches to economics and the environment for a number of years. The new program goes beyond the organization's traditional concern for economic instruments and resource pricing to look at the adaptations of fiscal systems for environmental purposes. A number of countries have begun to experiment with some of these new economic methods for dealing with the environment.

In the spring of 1988, the Swedish government presented a bill on environmental policy for the entire government to its legislature. The Swedish program is extensive, cutting across all government departments and stressing, as a matter of policy, the prevention of problems rather than the curing of symptoms. It lays down a series of hard targets for each sector of the Swedish economy, including taxes on heavy trucks, investments in high speed trains and a carbon tax on fossil fuels. Norway has also imposed a tax on cars entering Oslo city centre and has substantially raised its gasoline taxes. Since July a tax has been levied on the production and use of CFCs with a goal of complete elimination by the year 1995. Norway has committed itself to energy conservation and taxing policies which will result in the stabilization of CO_2 emissions by the end of the century. Energy and transport policies will be adjusted to bring about major reductions of NOx (30 percent by 1988) and SO_2 (50 percent by 1993). Denmark passed a CFC tax and a charge on pesticides and very high taxes are now levied on garbage recycling. Legislation now before parliament will triple the rubbish charge and will increase taxes on the uses of raw materials.

This new approach appears to have found favour with Canada's federal government. The Green Plan contains a provision for the release of a discussion paper in 1991 on the use of economic instruments in environmental protection. The Plan also calls for the establishment of a network of research institutions on the use of economic instruments and the establishment of emissions trading arrangements with the provinces.

Measuring Ecological Capital

The merging of environment and economics requires that we treat the world's renewable natural resources as capital and that we attempt to live off the interest of that capital, rather than constantly running down the principal as the statistics tell us we now do. This will require accounting for the ecological capital in a country's balance sheet, much as we now account for the manmade capital of housing, factories, roads, machinery and the like. At the moment, a country's GNP is

increased each time it cuts down a tree to manufacture a product. All of the labour and machinery that go into the production of plywood or pulp or furniture are quite properly counted as an addition to the country's well-being. The mills that are constructed to carry out these activities are counted as being an addition to a country's economic prosperity. But nowhere in the national balance sheet do we account for the value of the diminishing forest resources. As the World Bank economist Herman Daly put it, this is a bit like running the world as if it were a company in liquidation, especially if up to three-quarters of the value of a country's exports are derived from its renewable natural resource base -- a common phenomenon in many developing countries. To see what kind of difference this sort of accounting might make, a group of American economists tried to construct a set of national accounts for Indonesia that took into account the change in the value of the country's forest resources as they were exploited and not sufficiently restocked. They found that the growth rate of Indonesian GNP during the period studied dropped from an average of seven percent per annum to about three percent per annum.

The Green Plan is quite encouraging on the subject of revising the national income accounts to show the value of ecological capital. Canada will be hosting an international conference on the subject next year and the Plan commits the government to implementing pilot accounts for natural resources over the next 18 months, with regular publication of the environmental components of the new accounts by the year 1996.

The Ontario Round Table Challenge Paper suggests that the province begin to apply these principles to the value of its own natural resources as part of the development of a sustainable development strategy. Other CCME members might want to consider initiating research in this area or entering into partnerships with the federal government.

Market Based Incentives (MBIs)

Perhaps at the other end of the spectrum from the command and control approach are the "market-based incentives" (MBIs), now being greeted with new enthusiasm. Popularized by the British economist David Pearce, these are attempts to intervene in the market to create the conditions for environmental improvement. They take several forms, and can intervene in a production process at different stages.

Though command and control may continue as an approach to regulation, arguments have been advanced that a more efficient allocation of both government and social resources would result from a greater use of MBIs. However, the replacement of a large part of the current regulatory system with MBIs would require a significant change in attitude on the part of regulators. Pollution and its regulation would have to be treated primarily as economic matters, though the regulatory system would still need to be medically and scientifically based. Various types of pollution would be treated as costs imposed on society in the form of depreciating natural capital, morbidity and mortality, aesthetic damage, and so on. As Pearce has

put it, regulation would then be about driving a "wedge" between economic activity and its impact on the environment.

The use of market based incentives would lead to less expensive regulation by allowing government to shift regulatory costs to the private sector via the price mechanism. Since government would continue to determine regulatory content and standards, the principal advantage to government would be a reduction of monitoring and compliance costs. As well, government could gain financially with a reduction of perverse subsidies and the application of corrective taxes.

Because they employ market mechanisms, incentives should also be superior to command and control in making product prices reflect true production costs. Economists distinguish between the internal costs of a firm – the cost we encounter on the profit and loss statement – and "externalities" which lie outside of the firm's cost structure. Externalities are very much a part of the costs of production – the part that a firm or industry does not have to pay for but which fall on society. Industrial pollution, in whatever form it has taken, has historically been treated as an externality. "Internalities" and externalities, together referred to as the "social costs" of production, should jointly determine product price (though, where monopoly elements exist, prices will still be distorted away from socially optimum norms).

However, externalities will not enter into price unless forced to do so (or to use Pearce's term, unless "wedged-in") by regulation. This is important because externalities are often major costs. When regulators force them into private cost structures by, for example, removing a perverse subsidy (e.g. support of chemically based farming) or by imposing a green tax (e.g. on carbon fuels), producer and consumer choice is placed on a more socially optimum footing (assuming, of course, that a clean environment is socially valued). Both producer and consumer must now decide if they want a product at the higher cost and price, or if they want as much of it as they had before. If the increase in the cost and price of a valued product is sufficiently large, it should encourage a search for new products and less costly methods of production.

It must be remembered that market based incentives will not entirely eliminate reliance on command and control. Many environmental actions governments must take are of a non-market character - the development of parks or the protection of endangered species, for example. As well, monopolized markets may be insensitive to price-based approaches, except in the long-run (e.g. tobacco, alcohol).

It must also be noted that an incentive based approach would not reduce governments' regulatory responsibility. As with command and control, governments would continue to set regulatory agendas, establish standards, and ensure compliance. Nor would the use of market based incentives diminish the need for government support of research into pollution causes and effects.

The incentives can take several courses.

Taxes and Charges

Taxes or charges can be applied to inputs, effluents or to the final product. The most controversial of the first is the much discussed carbon tax. The purpose of a carbon tax is to raise the price of the most CO_2 producing fuels high enough either to induce fuel switching or to persuade users to use the fuel much more efficiently. Sweden now has a tax of this type and other countries are considering following suit. Although Mr. de Cotret was under intense pressure from the environmental lobby to introduce such a tax in Canada, it is not present in the Green Plan and is unlikely to be introduced in the near future. There appear to be two major problems with this sort of input tax. First, it treats all users of the input in the same way -- those who have introduced fuel efficient technology must pay the same penalty as those who have not. Secondly, the government maintains that a carbon tax in Canada which would significantly reduce consumption would have to be very high -- indeed, too high to be politically acceptable.

Taxes or charges can also be introduced on effluents or emissions. Perhaps the best known are the European water effluent charges. First introduced in the Ruhr in the early part of the century, they have been most successful in the Netherlands, where successive governments have kept the charges high enough to persuade both industry and households to reduce the amount of wastewater needing treatment. British Columbia has a fee schedule for ambient, liquid and solid waste for a wide variety of commercial and industrial establishments from dairy farms and dry cleaners to mining and oil refineries. Although the scope of the regulation is appropriately broad, the fees imposed are arguably too low to encourage serious investment in waste reduction. They are also on a linear scale rather than a geometric one, providing little disincentive to pollute more.

Finally, the most common of user charges are the taxes on final products. Ontario and British Columbia both levy tire taxes, designed to help pay for the disposal, recycling or re-use of the discarded product.

Emissions Permits

A more complex market scheme is the "emission trading certificate" recently enacted as the cornerstone of the 1990 amendment to the U.S. *Clean Air Act*. The *Clean Air Act*, administered by the Environmental Protection Agency (EPA) is the primary vehicle for combating air pollution. Two of the *Act*'s major components, part of a 1970 amendment, require the EPA to establish national ambient air quality standards (NAAQS) for common pollutants and to establish national emission standards for hazardous air pollutants. NAAQS target "criteria pollutants" such as sulphur dioxide, nitrogen oxides, particulate matter, carbon monoxide and chemicals that contribute to the formation of ozone. The EPA sets standards, reviewed every five years, for maximum emission concentrations of these substances, according to public health concerns. Each state must then develop a State Implementation Plan (SIP) whereby the standards are enforced on a source-by-source basis. New sources are not eligible for the same standards as existing sources but rather are subject to increasingly strict controls for criteria pollutants according to the "best available demonstrated control technology". Both existing and new sources which fail to meet

their NAAQS are then subject to the more stringent measures of the non-attainment program requiring the source to install the best pollution control technology, "reasonably available" to that particular source category. Section 112 requires that hazardous pollutants be subject to a more stringent regulatory strategy. "Hazardous substance" is defined in the *Act* as that contributing to increase in mortality, serious irreversible illness, or incapacitating illness.

The *Clean Air Act* amendment of 1990 seeks to improve the enforcement mechanisms of the *Act*, by further increasing administrative powers, lowering permissible emissions and creating a market scheme for tradeable emission allowances. First, the amendment sets a single national cap for total sulphur dioxide emissions. Improved monitoring and enforcement powers for the administering agency, the EPA, and increased criminal penalties for both the polluting business entity and its directors and officers insure that this national cap will be respected. Second, the distribution of emission allowances to existing utilities and the creation of a free market to trade in those allowances, leave latitude as to how that cap will be respected.

The market mechanism, Title IV of the *Clean Air Act* Amendments, concerns the control of acid rain precursors, sulphur dioxide and nitrogen oxides. The operative provision of Title IV is the establishment of an emissions allowance and trading program for sulphur dioxide (sources may be allowed to substitute nitrogen oxide at a rate of 1.5 units of nitrogen oxide to 1.0 of sulphur dioxide). The amendment sets a national goal for the maximum emission of sulphur dioxide, with every concerned utility authorized to emit a percentage of that total. The cap sets as a goal a ten million tonne reduction in total sulphur dioxide emissions by the year 2001. An emission certificate authorizes release of a fixed volume of fixed toxicity of a given pollutant. Each utility annually receives a specified number of these allowances. Certificates will also include monitoring and reporting requirements. Utilities must have allowances for all emissions, on pain of heavy fines. They are free, however, to sell, save or purchase allowances according to their needs. It is in the market for these allowances that the value of the right to pollute is determined. Interested parties bid to purchase emissions certificates in a decentralized marketplace rather than in the centralized planning process of state and federal governments. Trade in the market for pollution allowances is expected to reduce the costs of abatement. A central government agency, the EPA in this case, should keep records of all transfers to facilitate the monitoring of actual *vis-à-vis* permissible emissions. New plants or new units of existing plants must obtain emission certificates, either by sale or by transfer from another unit within the same entity.

This trading provision, when combined with a national cap on total emissions and rigorous monitoring, assures that the government's goal is achieved while leaving industry the option of how to achieve it. By requiring individual utilities to bear the cost of reducing emissions, the scheme nevertheless requires the polluter to pay. What is likely to result is a weighing of the cost of installation of pollution control equipment against the purchase price of an additional emission allowance. Manitoba has provided for a similar strategy whereby the Governor in Council can create a market for the emission of specific pollutants. The revenue generated from the sale

of emission certificates is then to be held in trust for an environmental contingency fund for use in the event of an environmental emergency.

Industry has voiced concern that the envisioned market will fail to develop, creating a hoarding network wherein more powerful companies will succeed in wresting control of a majority of the emissions certificates. Proponents of the amendments counter that hoarding or the refusal to sell to a needy buyer will not occur due to anti-trust legislation and the equalizing force of a free market place. Because emissions trading on an industry-wide scale has never been attempted, it remains to be seen whether these concerns are warranted.

The Green Plan contains several references to tradeable emission permits, including a commitment to cooperate with the provinces to incorporate trading into federal/ provincial agreements by 1993 for the B.C. Lower Mainland and the Windsor/ Quebec and Saint John areas.

Tax Incentives and Subsidies

A third market mechanism is the tax incentive. Under the *Income Tax Act*, an accelerated capital cost allowance is provided for the purchase of pollution abatement equipment. The accelerated nature of this write-off promotes the use of the eligible technology. Tax rebates and investment tax credits are other means by which to encourage the growth of the market for pollution abatement equipment and processes.

Environmental taxes are in use in various countries. Items on which Denmark has placed environmental taxes include CFCs, beverage containers (refundable), solid waste, disposal of waste tablewares, pesticides in small containers, raw materials, and unleaded gasoline. France's *Plan Vert* envisages increased water charges; taxes on sulphur oxides, nitrogen oxides, hydrocarbons and solvents; charges on waste disposal sites (with revenues earmarked for waste reduction measures). Many governments have supplemented favourable tax treatment provisions for pollution control equipment with subsidies provided directly to producers.

Subsidization can play a positive role. For example, Norway subsidizes environmentally friendly electricity production and uses a combination of subsidies and taxes to steer consumers towards automobiles which produce the fewest exhaust gases. Canada has subsidized small domestic hydro power projects and home insulation programs.

More important than the provision of ecologically based subsidies is the removal or modification of those existing subsidies which are often the source of degradation and depletion of a country's stock of ecological capital. The subsidization of inefficient, at times archaic, production processes has been a significant factor in pollution. Two recent examples come to mind with great clarity. One is the bias in the fiscal structure of prairie agriculture which not only drives farmers to produce large quantities of crops for which there is no market but also encourages them to drain wetlands and cultivate marginal land. The other is the structure of subsidies

and tax incentives which led to the overcapitalization and subsequently the near collapse of the North Atlantic cod fishery.

Privatizing Common Property Rights

Perhaps the most controversial set of suggestions for market based instruments involves the privatization of certain common property rights. The argument for such a system is quite simple. If a common resource, such as forests or water, is not closely regulated, it tends to be treated by the market as a "free good" into which wastes of all sorts can be deposited. And, in Canada at least, the regulatory process has not been a great success.

The exponents of private property rights point to the far superior record of forest management on private lands, to the regulation of water quality in many streams and rivers in Europe by fishing clubs and the like. A number of Canadian researchers have argued that the only long term solution to Canadian forest management problems lies in transferring long term development rights to the private sector.

4. Environmental Reporting

In their role as managers and protectors of the environment, governments generate the bulk of environmental information in Canada. In 1985, the federal government alone spent $550-million and allocated 6,470 person-years to its environment and natural resource surveys[10].

This information is not widely accessible. Many government departments collect environmental information for their own policy-making or regulatory uses but have no reason to ensure that the information they gather is consistently reported. The 1987 report of the stakeholder group on environmental reporting noted the following barriers to environmental information in Canada:

- no comprehensive network of information sources;
- no comprehensive framework describing the scope or extent of interactions between human actions and the environment;
- little knowledge of, and often no means of obtaining, data collected by industry, hospitals, universities and research institutions for their own specific purposes;
- insufficient data to permit understanding of linkages between economic activity and resource activity or to permit effective risk analysis or epidemiological studies;

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[10] Study Team Report to the Task Force on Program Review ("Nielsen Task Force"). *Major Surveys*. Ottawa: Minister of Supply and Services, 1986.

- no independent institution or agency capable of assembling environmental data and assisting in interpretation;

- inadequate ongoing national monitoring program to determine levels of toxic substances in human, fish and wildlife populations;

- significant regional variations in the availability of data. [11].

Although some of these barriers are being overcome, they continue to impede state of the environment reporting. Canada's performance in this regard generally reflects an international neglect of environmental information.

These problems do not exist only on the federal level. In Quebec, for example, *La Commission d'enquête sur les déchets dangereux* concluded that it was impossible to calculate the volume of hazardous wastes in the province, in part because the provincial environment ministry, which is responsible for managing these wastes, has no jurisdiction over the wastes produced by mines, the aluminum industry, pulp and paper plants, hospitals or the agricultural sector -- all of which are regulated by different provincial departments.

Other barriers to timely national environmental reporting include:

- many data are based on census information and are therefore updated only every five to ten years. Some data, however, are out of date because little apparent effort is made to collect them even in areas of ostensible priority. Thus, the latest comprehensive Canadian survey of hazardous wastes was done in 1982. Even acid rain information is two years old by the time it is published. The lack of up-to-date information makes it more difficult to assess the effectiveness of government environmental programs.

- some data are no longer being collected: for example, the federal government has stopped collecting data on changes in land use as a result of budgetary reallocations in Environment Canada. There are no plans to collect more information on the impact of urbanization on agricultural land.

- some data are not directly comparable: for example, different standards of air quality are being used in individual provinces. The same applies to definitions of "NSR lands" (not sufficiently restocked lands) in forestry. The criteria for the protection of natural areas and mapping of natural regions also differ from province to province.

- many data are incomplete. For example, the data on endangered species do not include invertebrates and have incomplete coverage of plants and fish.

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11 The Stakeholder Group on Environmental Reporting, *A Study of Environmental Reporting in Canada*. Ottawa: Minister of Supply and Services, 1986.

On the other hand, sub-species or independent populations (e.g., the St. Lawrence beluga) are listed although the species as a whole is healthy.

Canada's first State of the Environment (SOE) report was published in 1986. The second report, to be published in 1991, uses a different approach in reporting environmental information and its results will not be directly comparable to those in the first report.

Quebec has published one State of the Environment report and is planning a second one in 1992. Manitoba, Saskatchewan and British Columbia are all to release SOE reports in 1991. Alberta, the Northwest Territories and Yukon are planning their own SOE reports but have not established publication dates. Since 1980, Environment Canada has published an SOE report for the Atlantic region every five years.

The federal government's Green Plan makes a number of commitments related to:

- natural resource accounting;
- a national environmental information network;
- a national state of the environment organization;
- environmental indicators.

As the link between human health and environmental quality becomes more firmly established, public demand for access to environmental information is likely to increase. The federal initiatives in the Green Plan may put pressure on the provincial and territorial governments to release more environmental information in their possession.

Environmental Indicators

The public can judge a government's economic performance informally by relying on a wide array of economic indicators: every day, the value of the Canadian dollar and fluctuations in the stock market are widely reported; every week, the Bank of Canada's setting of interest rates is eagerly awaited; every month, Statistics Canada publishes figures on the balance of trade, unemployment, the rate of economic growth and inflation. These indicators play a powerful role in communicating to the electorate what is the state of the economy. They not only influence decisions taken by consumers and investors but also the government's political popularity.

There is no parallel system of environmental indicators in Canada today which would allow the electorate to judge the country's environmental performance. Environment Canada started to fill this gap by publishing a preliminary set of environmental indicators in 1991. One of the challenges governments face is to gain acceptance for scientifically-sound indicators before the public or interest groups develop less trustworthy ones.

Data for some of the most important environmental indicators do not exist, for example:

- *Agriculture* -- tons of topsoil lost/ hectare or amount of wetlands lost; remaining organic matter in soils; total amounts of pesticides, herbicides and fertilizer applied or return per level of effort (do we have to use more and more fertilizer for the same crop?)

- *Fish* -- Ontario is the only province to research in detail the presence of contaminants in fish and publish the results. The health of the fish at the top of the food chain is a good indicator of the health of the entire aquatic ecosystem.

- *Human health* -- PCB (or dioxin-equivalent or other toxics) content in mothers' milk; number of people at risk from hazardous wastes.

ENVIRONMENTAL PROTECTION AND REHABILITATION

It is human activity which gives rise to the issues described in other sections of this report -- activity which has altered the physical features of the earth and the quality and quantity of its resources. Not only have we seriously depleted many of these resources and contaminated the air, water and land: the changes people have wrought are so profound that degradation of the environment is now affecting the health of biota and humans.

The resolution of environmental issues requires approaching the problems they pose from different points of view. This section takes a different focus by concentrating on the human activities which give rise to present day environmental issues, and argues that these activities must be considered in the context of the "ecosystems" in which they take place.

1. The Ecosystem Approach

Environmental protection means managing human activities so that their effects on the environment are eliminated or minimized. There are two prime considerations: the activities themselves, and the nature of their interaction with the environment.

The activities which affect the environment are complex. The building of a roadway impinges on the environment in hundreds of ways, as does the introduction of a new chemical into common use. Consequently, environmental protection must be comprehensive and embrace the full scope of human activity.

First, this means anticipating and preventing further damage to the environment from new works, initiatives and products, and then scrutinizing their effects

throughout all phases of their lifecycle. For physical projects, this involves assessing the environmental impacts of an initiative before it is implemented, and then mitigating and monitoring any impacts which do occur, up until and following project completion and decommissioning. For chemical products, it involves assessing the fate and effects of chemicals in an ecosystem, and assuring safe use and disposal are possible before one is introduced into the marketplace.

Second, environmental protection means controlling the effects on the environment of industrial practices and processes, other human activities, and commercial products which are currently damaging the environment, through all available means including regulation, financial assistance for implementing control measures, and developing new process and control technologies.

Third, it means restoring environmental quality where it has already been degraded, and dealing swiftly and completely with any accidental release of a polluting substance.

At the same time, we must realize that the environment itself is a complex system of natural processes, and that the activities of people affect the environment in diverse and intricate ways, many of which are still poorly understood. Confronting today's environmental issues through environmental protection and rehabilitation requires the acceptance of a fundamental point -- everything is connected to everything else! This truism captures the essence of the complex interdependence of air, water and land systems and their related living organisms, including humans. With this "ecosystem approach", it is clear that in almost all circumstances it is human activity, not the environment, that needs to be "managed". It requires that we go beyond the piecemeal, knowing that decisions in one area can affect all others. Though this concept is accepted widely, it is neither understood well nor systematically applied.

The ecosystem approach has been pioneered in the Great Lakes basin, a region of Canada and the United States that is home to 37 million people and under the jurisdiction of two federal governments, eight states, two provinces, plus a multitude of counties, townships, municipalities and Indian reserves. The principal legislative instruments behind the ecosystem approach in the basin are the Boundary Waters Treaty of 1909 and, in particular, the 1978 and 1987 revisions to the Great Lakes Water Quality Agreement (GLWQA). This Agreement and its attendant institutions encourages the protection of the region based on boundaries of nature, not merely traditional political or disciplinary boundaries. It recognizes the inter-relatedness of physical, chemical and biological processes and the need to harmonize the human element with all other elements of the natural system. It acknowledges what has become obvious -- that we live in a web of mutually dependent ecological relationships that range in scale from households and neighbourhoods, to nations and the global biosphere. The air, land and water issues facing us today make it clear that no single jurisdiction can act on its own in solving them.

> "There are no borders to pollution and there should be no borders between the people who are working to clean it up."
>
> - Phil Weller, *Freshwater Seas*

The key characteristics of the ecosystem approach are described in *Watershed*, the interim report of the federal/ provincial Royal Commission on the Future of the Toronto Waterfront (Crombie Commission). The ecosystem approach:

- includes the whole system, not just parts of it;
- focuses on inter-relationships among the elements;
- understands that humans are part of nature, not separate from it;
- recognizes the dynamic nature of the ecosystem -- a moving picture rather than a still photograph;
- incorporates the concepts of carrying capacity, resilience, and sustainability -- suggesting that there are limits to human activity;
- uses a broad definition of the environment -- natural, physical, economic, social, and cultural;
- encompasses both urban and rural activities;
- is based on natural geographic units -- such as watersheds -- rather than on political boundaries;
- embraces all levels of activity -- local, regional, national, and international;
- emphasizes the importance of living species other than humans and of generations other than our own;
- is based on an ethic in which progress is measured by the quality, well-being, integrity, and dignity it accords natural, social, and economic systems.[12]

The ecosystem-dominated approach re-orients everything from local and regional decision making to the nature of future social and natural science research. It requires a more comprehensive and cooperative approach by all jurisdictions and professions. It is proactive, seeking to anticipate and prevent environmental degradation. It reinforces the notion of public trust, with governments as trustees for present *and* future generations.

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[12] *Watershed*, The Royal Commission on the Future of the Toronto Waterfront, DATE, PAGE.

The ecosystem approach is embraced in the goals for sustainability set in the World Conservation Strategy and the Brundtland Commission. Indeed, it is only the ecosystem approach that leads to sustainable development. Through the GLWQA and, more recently, the Crombie Commission, Canada has become a world leader in the development and application of the ecosystem approach. Through the CCME, it could be applied coast to coast.

An important aspect of basing decisions on an ecosystems approach is the assessment of the risk inherent in various government policies. A risk-averse environmental strategy will favour an anticipatory over a reactive approach to policy-making.

Risk assessment has been defined for the CCME as "the systematic, scientific determination of the likelihood that a hazard will cause adverse consequences, either direct or indirect, to human or non-human biota by physical, chemical or biological perturbation of the environment."[13] Although the identification and estimation of risk requires the application of scientific techniques, the assessment of risk is inherently a value-laden exercise. The determinations of what level of risk is acceptable and who should bear it cannot legitimately be made without some measure of public consultation on the trade-offs involved.

It is against this background that the major environmental protection challenges facing Canadians are described below. The first section deals with the imperative of understanding and managing the effects of the chemicals and toxic substances we use every day and which find their way into the environment. This is followed by appraisals of specific environmental issues related to the three principal components of the environment upon which all life depends: the air, the water, and the land. Many of these latter issues have at their heart causes relating to toxic substances.

The Ecosystem Approach and Human Health in the 1990s

There can be little doubt that the most alarming issues for the late eighties and early nineties are the effects of various kinds of environmental problems related to the exposure to persistent toxic substances, often in amounts that appear to be infinitesimally small. Since World War II, the numbers and amounts of toxic chemicals manufactured, used, discarded and discharged into the environment have increased dramatically. Between 100 to 200 new chemicals are being added to the Chemical Abstract Service every year. Several of these substances are known to pose serious threats to public health and the environment and the effects of many others have been inadequately studied.

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[13] Summary of the workshop on risk assessment as an environmental management tool, February 1990, p 3. Prepared by Concord Scientific Corporation for the Canadian Council of Ministers of the Environment.

"We know very little about the impacts of these [persistent toxic] compounds on ourselves as human beings ... [because] we've been afraid as governments to fund studies to look at those kinds of impacts."

-Dr. Wayland Swain,
Testimony before the Alberta-Pacific Environmental Impact Assessment Review Board
December 4, 1989

Over the last decade or two, exposure to persistent toxic chemicals has been documented by measuring residue levels of organochlorines, such as PCBs, DDT and dioxins, in a variety of animal and human tissues, as well as by conducting individual and population exposure assessments. The effects of exposure have been assessed in many species, including humans. Particularly concerning are the effects of long term, low-level exposure from the long-range transport of airborne pollutants. No region, however remote, is assured of being safe.

In the Great Lakes basin, adverse effects from exposure to toxic chemicals have been demonstrated in sixteen top predator species. The babies of women who consumed as little as two meals of fish per month from Lake Michigan were shown to have a shorter average gestational age, a smaller average head circumference and a lower average birth weight than experimental controls. Some psychoneurological effects were observed at birth and others are now being observed as the children grow.

There is evidence that many persistent toxic chemicals have similar mechanisms of action in wildlife and human species, suggesting that effects on wildlife could be important indicators of effects on humans. Persistent toxic chemicals are known to bioaccumulate in food webs, so that concentrations are higher in humans than in biota at lower trophic levels. This is evident, for example, in problems related to PCB contamination of mother's milk among Inuit in the eastern Arctic.

The serious and widespread problem of persistent toxic substances in the Great Lakes biosystem requires an approach that enables the Parties, jurisdictions, municipalities and individuals in the Great Lakes basin to collectively lessen the current threat to the ecosystem. The premises for such an approach are:

i) All persistent toxic substances are ultimately harmful to the integrity of the environment, both in the Great Lakes region and globally, and should not be allowed to enter the environment.

ii) Persistent toxic substances find their way into the environment in many ways, through production, residuals, discharge, use and destruction.

iii) The technology either exists -- or can with very few exceptions be developed at some cost -- to replace (or control in the interim) the use of persistent toxic substances.

iv) Sufficient information is now known for society to take a very restrictive approach to allowing persistent toxic substances in the ecosystem and to declare such materials too risky to the biosphere and humans to permit their release in any quantity. The result in implications far beyond conventional measures of long-term net economic costs referred to in premise iii.

International Joint Commission
Fifth Biennial Report on Great Lakes Water Quality, Part II, 1990

The first line of defence is to control these substances before they even reach the marketplace. The second is to control the release into the environment of those which are already being produced and used. And the third is to clean up toxic wastes and contaminated sites. The federal government's Green Plan calls for the "virtual elimination of persistent toxic substances" which extends the leading principle of the 1978 Great Lakes Water Quality Agreement. The Green Plan promises to further this goal by regulating the discharge of individual chemicals where toxicological evidence already exists, accelerating toxicology research, and promoting full lifecycle management of chemicals to reduce discharges beyond regulated amounts. The key instrument for doing this is the *Canadian Environmental Protection Act* of 1989.

However, crucial as they are, current approaches to the management of toxic substances do not address the fundamental need for a greater understanding of the fate and effects of these substances in ecosystems. The current thrust is limited and defined by what we don't know; that is, it aims to control only certain substances by limiting the amounts which may be introduced into the environment, without full understanding of what the true effects in ecosystems of all chemicals are, and without trying to find alternatives to their use.

Several observations in this vein can be made:

- It is almost impossible to establish the normal, scientifically accepted cause and effect relationships between exposures and specific effects. This is because humans are exposed to many chemicals over a lifetime, through several different exposure pathways (e.g., air, water, food) and because most chemicals do not cause unique effects. The traditional scientific method is inadequate. Simply doing more scientific research into causality in the environment, as most governments are now prone to do, will not provide sufficient assistance to decision makers. It certainly will not meet the growing need for answers among the public. A new scientific paradigm is needed to study interactions in complex ecosystems. This could be explored by applying general systems theory and developing integrative research methodologies to study relationships, interactions and functions in whole systems.

- To date, most research has focused on gross indicators of health in humans and wildlife (e.g., population status, mortality, cancer and tumours, birth defects). More subtle, but nevertheless important, indicators of health such as psychoneurological effects, effects on the immune system and developmental effects are only now beginning to be considered. In contrast, current definitions of health are extremely broad and emphasize the social and psychological aspects of health, as well as physical health.

- The medical profession has not taken a strong interest in the environmental determinants of human health, although recently there have been some notable exceptions, such as environmental hypersensitivity.

- The scientific disciplines involved are not communicating adequately with each other. In the case discussed above, human toxicologists and epidemiologists are not collaborating with wildlife toxicologists and epidemiologists and vice versa. Thus, studies on wildlife and humans are not being related to each other.

- Standards and guidelines related to toxic substances focus on individual chemicals; standards for environmental quality, based upon the ecological implications of such substances, are lacking. Such criteria are essential for making environmental protection policies and programs more effective.

2. Air Issues

Urban Air

Air quality in most Canadian cities with a population in excess of 100,000 is monitored by the federal government through the National Air Pollution Surveillance (NAPS) monitoring network. This network was set up in 1970 and

standardized in 1974; thus, for most common air pollutants, at least ten years of data are available. Since 1974, the concentrations of several air pollutants have declined significantly, although ground level ozone and smog (of which ground level ozone is a main component) continue to be major urban air pollutants of concern.

Table 2

URBAN AIR QUALITY IN CANADA

POLLUTANT	1987 AVERAGE CONCENTRATION	PERCENT DECLINE 1978-87	PERCENT DECLINE 1974-87
sulphur dioxide	5 ppb	50	61
nitrogen dioxide	21 ppb	27	29
carbon monoxide	1 ppm	33	58
Ozone	16 ppb	no change	N/A
Total suspended particulate	48 ug/m^3	22	40
Particulate lead	0.1 ug/m^3	76	85
Coefficient of haze	0.28 COH	no change	26

SOURCE: *National Urban Air Quality Trends -- 1978 to 1987.* Environmental Protection Series 7/UP/3, May 1990.

Ground level ozone is the most serious of measured air pollutants and is being produced in higher concentrations each year. In 1987, 52 percent of the stations recorded concentrations of ground level ozone exceeding the maximum acceptable level set by the National Ambient Air Quality Objectives.

Ozone is produced by the sun's photochemical actions on volatile organic compounds (VOCs) and nitrogen oxides (NOx), the major source in urban centres being the exhaust of cars, trucks and other gasoline-powered vehicles. These photochemical reactions are energized by temperature and sunlight in a stagnant air mass, and such conditions occur most frequently from late spring to early fall in most of the country's cities. A one-hour exposure to high levels of ozone, by itself or combined with other pollutants, can cause eye irritation, breathing difficulty and decreased visibility, and can damage vegetation. Apart from the deleterious local effects of smog on human health, it is also a greenhouse gas which contributes to global warming.

Since ground level ozone is not produced at a single point source, it is difficult to control. To reduce levels of ozone in Canadian cities, more stringent emission standards for vehicles will be needed, as well as a general reduction in the use of gasoline powered vehicles. CCME has committed itself to reducing ground level ozone to environmentally acceptable levels by 2005.

The federal government's Green Plan has set the goal of nationwide reduction of the concentration of ground level ozone to levels below the threshold at which the most

susceptible segments of the population experience health effects from smog. For its part, the CCME is finalizing a comprehensive ten year national plan to manage emissions of NOx and VOCs. The plan aims to reduce emissions in problem areas by 50 percent.

Recognizing that Canadian actions alone are not sufficient to reduce toxic air pollution, the federal government has promised to pursue negotiations with the United States under a transboundary air quality accord to incorporate both countries' commitments to controlling the flow of toxic air pollutants and VOCs.

Other complex pollutants

Many other complex pollutants emitted into the air are not monitored by existing networks, and these may become the focus of pointed public attention. These pollutants could include lead, cadmium, PCBs, dioxins and mercury from incineration. While the reduction of nitrogen oxides and hydrocarbons is being addressed by the CCME, better appreciation of other pollutants Canadians breathe is also needed.

A prototype initiative might be Ontario's clean air program, which proposes stringent emission reductions while including initiatives to classify contaminants in terms of level of hazard, and to develop ambient air standards for 400 contaminants. Currently undergoing public review, this program will require contaminant emission reductions which could cost $6-billion in the next ten years to achieve. The principal elements of the program are to:

- impose direct emission limits, achieving bottom-of-the-stack controls;
- classify contaminants in terms of the level of hazard each poses and develop graduated levels of control based on hazard; and,
- develop ambient air standards for 400 contaminants as a "second line of defence" for air quality control.

Air quality indices

In many areas of the country, the immediate health risks of poor air quality are not addressed adequately. The data on concentrations of air pollutants collected by the NAPS network are not published for three to four years. There is no national air quality index to which these concentrations can be applied in order to inform the public immediately on the quality of their urban air. The province of Ontario and some large urban regions such as the greater Vancouver regional district and the Montreal regional district monitor air quality in addition to the NAPS network and apply these measurements to an air quality index. These provincial and regional indices, however, are not nationally uniform.

Waste Incineration

Canadians are greatly concerned about the potential threats to air quality and human health from waste incineration. Incinerators are seen as a source of airborne dioxins and furans. They are also blamed for large emissions of mercury, cadmium and lead from batteries and other industrial/ commercial sources.

This concern is impeding the development and implementation of waste incineration technology. Citizens in B.C. halted a proposed hazardous waste facility supported by the provincial government. In Ontario, doctors and citizens in Orillia stopped a proposed incinerator designed to handle Metro Toronto's garbage -- after Orillia's mayor and council had tentatively accepted the proposal. The Ontario government has now promised to ban all garbage incinerators in the province. Citizens in West Lincoln and Niagara Region are currently attempting to halt a proposed toxic waste processing facility which includes an incinerator. The Decom incinerator in Quebec, used to burn medical wastes, has been the subject of much public scrutiny and upgrade requirements.

The use of Refuse-Derived Fuel (RDF) and Waste Derived Fuel (WDF) in cement kilns is being touted in North America as a partial solution to the waste crisis. However, contrary public reaction has been strong. In Ontario, local residents around the St. Lawrence Cement kiln where hazardous industrial waste from the U.S. has been burned for years, have identified what they think is a "cancer cluster" downwind from the kiln. Residents around the St. Mary's Cement kiln oppose the burning of tires for waste derived fuel.

Waste incineration is a significant component of the current mix of waste management technologies. For the destruction of some hazardous wastes, incineration may be the most appropriate option, if regarded as a transitional technology until the volume of toxic wastes being produced is curtailed and existing wastes are destroyed. This much is clear: jurisdictions must work together to develop and implement safe and acceptable waste management technologies.

3. Water Issues

Water is Canada's most abundant natural resource. It is also the most taken for granted, the most abused and probably the most undervalued. With increasing local, regional, continental and global pressures (e.g., global warming) in the 1990s and beyond, the strategic significance of Canada's inherited natural water wealth will become more obvious nationally and internationally.

As a common property resource, water is owned by everyone, yet belongs to no one. Its "management" and care are both facilitated and frustrated by individual property law; riparian rights; aboriginal rights; transboundary agreement;, municipal, regional, provincial and federal jurisdictions, and even the Canadian constitution. At the federal and provincial/ territorial level, water-related issues are further complicated by competing departmental mandates. In all this, there is no systematic accounting for the use and abuse of this resource, despite its role as "the lifeblood of

the environment". A more comprehensive system for dispute resolution and a more consistent management regime will be required in the 1990s.

Our aquatic ecosystems are under stress because of manmade inputs from both land and air. Some of the most pressing problems include: discharge of untreated sewage; discharge of industrial waste products, including persistent toxic chemicals; physical degradation, such as wetland drainage and siltation; contamination of groundwater from agro-chemicals and toxic waste storage sites; and chemical loading from the long range transport of airborne pollutants.

Because the hydrologic cycle is driven by energy from the sun, the impact of global warming in the 1990s and afterwards will be most evident in the availability and distribution of water in Canada. Major regional shortages are being forecast which, in turn, will affect everything from agriculture and municipal supplies to hydroelectric power generation and manufacturing. These shortages could lead to serious social and economic dislocations.

Urban Wastewater

Canadians use their waterways to dump many wastes, and depend on the same watercourses for much of their drinking water. Seventy percent of Canada's 26 million people live in cities and towns, making municipal wastewater the largest polluter in the southern part of Canada. Approximately half of Canada's urbanized population (53 percent of people in communities over 1,000) is served with secondary sewage treatment or better; most of this occurs in Ontario.

Another significant source of urban wastewater is storm runoff, which contains many varied pollutants. The contents of stormwater include airborne pollutants (e.g., dust and lead), rubber particles from automobiles, asbestos fibres from brake linings, animal droppings, lawn fertilizers, leaves and lawn clippings, salt, and general litter. Untreated sewage is often added to stormwater runoff, because storm and sanitary sewers are often combined. When the flows exceed the capacity of the treatment plant, such as during a rainstorm, the excess is released without treatment. Thus, in many urban centres water bodies are closed to swimmers after rainstorms.

The treatment of urban wastewater is becoming more complex due to the more than 30,000 different chemicals that are available on the Canadian market. Experience across Canada has shown that many of these chemicals end up in municipal treatment facilities that are not capable to deal adequately with them. As a result, these substances often enter the aquatic ecosystem, where they accumulate.

Industrial Effluent

Most industries require water and discharge wastes into water bodies, landfill sites or the air. Industrial wastes disposed of on land add toxins to a landfill's leachate (liquid runoff), which can leak into groundwater and nearby water bodies. Pollutants discharged into the air can be transported long distances, eventually to fall as chemical precipitation. The natural functioning of the hydrological cycle assures

us that these pollutants will eventually become part of the aquatic ecosystem. For example, acid rain has killed more than 14,000 Canadian lakes as the result of the long range transport of air pollutants. As well, the once pristine regions of the high Arctic now contain measurable levels of substances originating from as far away as Eurasia.

Industrial wastes are either rich in organic matter that lower oxygen levels when discharged into water and kill aquatic organisms, or contain chemicals that are lethal to aquatic organisms or accumulate in the food chain making fish unfit for human consumption. Sources include unauthorized discharge through municipal sewage systems, releases from mine tailings ponds, seepage from old coal tar sites and leaking underground storage tanks. One of the most important, however, is effluent from pulp and paper mills.

Pulp and Paper Discharge

The pulp and paper industry is of critical economic importance to Canada. Its mills are also the largest industrial sector polluters. Considerable progress has been made over the last decade in reducing the Biological Oxygen Demand (BOD) of their effluent. Recently, attention has been focussed on the persistent toxic substances in pulp mill effluent, particularly organochlorines such as dioxin and furans.

In British Columbia, such effluent has caused the closure of numerous fisheries. In 1990, affected areas had increased as much as five times in extent and were subjected to new restrictions, despite the fact that many B.C. mills have substantially reduced their dioxin and furan emissions. In Ontario, concern has focused on the nine mills producing bleached kraft pulp. Based on the 1988 report "Kraft Mill Effluents in Ontario", the Ontario Ministry of the Environment issued new control orders for these mills, requiring them to further reduce their dioxin and furan emissions as a five year interim measure until the more stringent Municipal/ Industrial Strategy for Abatement (MISA) regulations are implemented. CCME has announced its commitment to developing a national regulatory strategy for controlling water pollution from pulp and paper mills.

During the 1990s in Canada, it will be virtually impossible to construct or expand pulp and paper mills without comprehensive environmental assessments. One of the most important considerations will be the nature of the effluent discharges, particularly related to the persistent toxic substances. Although the issue is being addressed by the industry with encouraging results and by *CEPA*, it is clear that the issue will continue to be controversial. The Korean group, Shin Ho experienced this controversy recently in Thunder Bay and the Japanese-led Alberta Pacific consortium in northern Alberta is another case in point.

Changes to plant processes such as chlorine dioxide substitution appear to be effective as a means of reducing the formation of many persistent organic contaminants. Additional major reduction in BOD_5 would benefit local water quality and should further reduce the release of persistent organic contaminants.

Drinking Water

Water means life – a cliché that is literally brought home to Canadians daily in their tap water. Although public and private sector efforts to control pollution and provide safe drinking water have increased in recent decades, there is a growing perception by users that public water supplies and in many instances private wells are adversely affecting their health. As a result, sales of bottled water have doubled in the last eight years. Quebecers buy twice as much per capita as other Canadians. And sales of home treatment devices including filters have sky-rocketed. None of these measures assure, however, improved safety over what comes out of the tap.

The value of urban water treatment and delivery systems in Canada totals about $100-billion. While the water is delivered for many purposes, it all meets the standard of the most stringent use – that of drinking water. Indeed, much less than one percent of the water produced is actually used for drinking purposes. Toilets use nearly 25 percent, and during the summer about half of all treated water is sprayed onto lawns.

Most consumers judge their water on its aesthetics: how it looks, tastes or smells. Unfortunately, most of the substances that are hazardous to health are not detectable by any of the senses. Few if any of the treatment plants in Canada (or elsewhere) are able to remove these "invisible" substances from raw water. And while it is true that testing laboratories can detect organic and inorganic substances in most water supplies, there is wide disagreement about their effects. This includes the effects of chemicals used in the treatment process itself, such as chlorine.

The lack of regulation of the booming bottled water and home filter industry has received a great deal of attention. The lack of any laws governing the safety of tap water has also been criticized. The closest Canada has are "guidelines" developed by a federal/ provincial working group. Even as guidelines, they do not cover important industrial chemicals. The limits specified are, in themselves, difficult to establish and controversial even in the scientific community. This is illustrated by the allowable levels of trihalomethanes (THMs), a group of carcinogenic and mutagenic chemicals produced by the reaction of chlorine to breakdown products from decaying plant and animal material in water. Canada allows 2.5 times more than the United States, ten times more than the World Health Organization and 350 times more than West Germany!

It is clear that in the next decade there will be a growing need to restore public confidence in water supplies. Pollution prevention at source – stopping the use of waterbodies as sewers and the discharge of contaminants into the air – is part of the solution. But more direct action through enhanced treatment technology and clear performance standards will be necessary. The recent federal Green Plan promises a Drinking Water Safety Act in 1991. While its application will be limited to federal jurisdictions such as national parks and Indian reserves, it will, undoubtedly, stimulate regulation in other jurisdictions.

Water Pricing / Water Conservation

Canadians are among the world's most wasteful users of water; they also pay the least for it. In the ten year period to 1981, water withdrawls in Canada increased by over 50 percent. The population increased only five percent in the same period.

Charging for the use of any product, including water, is recognized as one of the best ways to control demand and to encourage efficiency of use. The "user pay" or "full-cost pricing" approach applies as much to agricultural (irrigation) and hydro use as to domestic use. Although the concept is not new, a more rigorous and consistent application in all Canadian jurisdictions will likely be in the forefront of water issues during the 1990s. Implementing a more comprehensive water pricing regime will create incentives to avoid waste, reduce pressure on the resource and the environment, generate revenues to cover direct and indirect costs, ensure more equity among users and increase public awareness of water's value.

Even though it is recognized as a subject over which provincial and local governments exercise jurisdiction, "realistic pricing" is the first of the five strategies that constitute the backbone of the federal water policy. It is also a feature of the government's Green Plan. And water pricing is currently the subject of numerous provincial, municipal and private sector studies. For example, a comprehensive analysis by the Canadian Water and Wastewater Association and the Rawson Academy of Aquatic Science, scheduled for completion in the spring of 1991, will result in a manual outlining the application of new pricing regimes for urban water services -- pricing strategies which realistically reflect fully allocated costs. As a result of such work, there should be greater unanimity emerging as to the functions of water rates, the methods for defining or determining different aspects of use or operations, the strategies for setting rates, and the accounting and cost allocation methods for new rate structures. The users of urban water and wastewater services (the majority of Canadians) will be the first to see and feel the effects.

Water Exports

Over 60 percent of Canada's freshwater drains north where many politicians, engineers and others see it as "wasting its way to the sea." With water demands growing in the south, this "untapped supply" will continue to keep diversions and exports on regional and national agendas. The effects of global warming will only increase the intensity of the resulting debates. Large scale water diversions are not new. With more than 600 dams and sixty large domestic interbasin diversions, Canada diverts more water than any other country in the world. During the Free Trade debate, however, a Gallup poll showed that Canadians consider water to be our most precious natural resource -- more important than the next two resources combined (agricultural land and forests, both of which depend on water). Sixty-nine percent of Canadians disapprove of exporting water to the United States. The basis for serious tensions throughout the 1990s and into the 21st century is obvious.

Over the last several decades there have been nine proposals for large scale interbasin water exports to the United States, with project costs ranging from $30- to over $150-billion dollars. There has also been recurring talk of southward diversions

from the Great Lakes (usually through the Chicago Diversion) plus numerous tanker bulk export proposals. Many of these export ideas persist despite the lack of government endorsement on either side of the border. And whatever the economics or technical feasibility of these proposals, there can be little doubt that they excite public passion across Canada.

> Fresh water is our lifeblood. It is considered by most Canadians to be the sacred depository of our identity and of our future.
>
> *-Peter C. Newman*

Smaller scale water exports, such as those being proposed on the west coast to deliver bulk water to the United States by ocean tanker, will likely require decisions in the early 1990s. This kind of export is not prohibited under federal or provincial law or policy. What remains to be clarified is how the approvals will be granted, including the environmental approvals. Thorny questions have been raised from aboriginal water rights to the compatibility with the Free Trade Agreement of British Columbia's regulation establishing a higher price for water exports than for water used domestically.

4. Land Issues

The key environmental protection issues related to land are (i) agriculture and its effects on the environment, (ii) solid wastes, and (iii) hazardous wastes.

Agriculture raises several concerns: soil conservation, the preservation of the productivity of the soil for future generations; environmental damage, the effect that agricultural practices have had on other resource stocks such as wildlands, parklands and waters, and on human health; and damage that other economic sectors may inflict on agriculture. These issues are discussed in the section on Renewable Resource Management, below.

Solid wastes

Fifteen years ago, the Science Council of Canada's report *Towards a Conserver Society* argued eloquently that the attitudes -- of individuals, businesses and governments -- concerning the consumption of material goods had to change. Triggering this change remains a major social challenge. Waste disposal is rapidly becoming the most critical issue faced by governments in larger, growing municipalities. Quite simply, we are running out of space to bury our garbage. According to the Green Plan:

> Canadians produce over 30 million tonnes of garbage annually, or more than a tonne of garbage for every man, woman and child. We recycle only ten percent of our garbage and send most of the remaining to our rapidly filling landfill sites.

The waste problem is exacerbated by rising disposal costs and increasing fiscal restraint. For example, in the United States, landfill costs for hazardous wastes rose from around $80 per tonne at the beginning of the 1980s to around $225 per tonne by the end, with the main increase being in costs of treatment rather than dumping. Incineration costs have probably risen still faster. [14]

This issue is a consequence of demographic and social trends. The rapid growth of urban centres, coupled with changing lifestyles and consumer tastes, has encouraged a high-consumption, quick-use and disposal-oriented society which produces enormous quantities of garbage and recycles little. Resolving the issue requires more than finding new landfill sites to which garbage can be trucked, or building more incinerators. It also requires going very much further than blue-box recycling programs. It demands a basic restructuring of social values related to consumption and waste, concurrently with effective, region-wide waste management strategies. Such strategies must be based on widely agreed objectives and standards, including measures such as controlled urban growth, in order to minimize waste generation.

Table 3

INTERNATIONAL COMPARISON
Annual Municipal Waste Generation
1987

COUNTRY	MUNICIPAL WASTES KILOGRAMS PER CAPITA
Canada	630
United States	762
United Kingdom	313
France	272
West Germany	317
Italy	263
Japan	344

SOURCE: *World Resources Report, 1990-91.* Washington: World Resources Institute

Municipalities which generate garbage are the principal "owners" of the problem, and it can be massive. In 1988, the Toronto Metro Works Department, which

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[14] "A Survey of Industry and the Environment", *The Economist*, September 8, 1990, p.10.

disposes of solid waste on behalf of the regional municipalities of York and Durham as well as Metro itself, handled 1.3 million tonnes of garbage annually, or one and a quarter kilos daily for each man, woman and child in the area. Yet, while responsible for solid waste, municipalities usually have little control over underlying causal factors such as population growth and changes in consumer demand.

Packaging is the single largest component of solid waste. In 1986, one-third of all of the municipal solid waste in the United States consisted of packaging. [15] In March 1990, CCME ministers endorsed a National Packaging Protocol for reducing packaging by 50 percent by 2000. A 20 percent reduction target from 1988 levels by 1992 was also approved. In the Green Plan, the federal government announced a number of initiatives designed to achieve a national goal of cutting waste by 50 percent by 2000. These initiatives include:

- by 1993, standards and regulations to reduce waste from packaging materials;
- by 1994, national standards, codes, policies and regulations for the other components of the waste stream;
- support for technological innovation; and
- expansion of the National Waste Exchange Program.

Hazardous wastes

According to the federal government's Green Plan, hazardous wastes make up about 20 percent of Canada's waste management problem. Apart from taking up space, the disposal of these wastes in landfill sites and accidental spills have caused serious and expensive land, water and groundwater contamination problems across the country. Many sites where such wastes have been placed are not being dealt with, or are unknown.

As well, the federal Green Plan states that Canadians continue to produce eight million tonnes a year of hazardous waste and only 40 percent of it is treated. In some cases, hazardous wastes are being stockpiled, awaiting the development of safe destruction technologies or construction of suitable waste management facilities. As described previously with respect to incineration, public concern related to hazardous waste management in general, coupled with lack of public and private sector commitment, is making the development of new technologies and the placement and operation of sorely-needed facilities difficult.

Clearly, management of hazardous wastes must begin with controlling the types of new chemicals and products being introduced. There is a need for strong regulatory programs at both the federal and provincial levels to control toxic substances before

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15 "A Survey of Industry and the Environment", *The Economist*, September 8, 1990, p.17

they become wastes. This must be accompanied by appropriate and effective control through all other phases of their lifecycle.

Non-regulatory approaches such as public education, economic incentives and research and development are important but do not replace the need for effective government response to the hazardous waste problem.

According to the Green Plan, complementary federal and provincial regulations and co-operative agreements are in place to control the handling, storage, disposal and destruction of hazardous wastes in Canada. Full implementation of these control measures, however, is awaiting decisions by the provinces on the location of new hazardous waste destruction facilities. In the meantime, existing treatment and destruction facilities are having to handle larger amounts of wastes.

Under the Green Plan, the federal government proposes to take further action to reduce the generation and ensure the safe transportation and disposal of hazardous wastes in Canada by:

- destroying all PCBs under federal jurisdiction by 1996;
- completing, with the provinces, regulations and guidelines for the safe management of hazardous waste streams, including reduction, re-use, recovery, recycling and transportation, by 1996; and,
- supporting technology aimed at reducing, recycling and re-using hazardous wastes, or their safe destruction.

The federal government currently relies primarily upon the *CEPA* and the *Pest Control Products Act* to identify and regulate toxic substances. *CEPA* is intended to manage toxics throughout their lifecycle but the pace of assessment of priority substances and regulation development under *CEPA* is slow. Notwithstanding these difficulties, some comments made previously are particularly relevant: decisions we are making now about the introduction, management and clean-up of toxic substances in the environment are premised on poor understanding of their full effect on ecosystems.

Contaminated Sites

Particularly worrisome are abandoned or "orphan" hazardous waste sites. The "polluter pay" principle as applied to the clean-up of hazardous waste is effective only where a polluter, owner or operator can be identified and liability assigned. When sites have been abandoned or the owner/ operator is identified but is insolvent or has only limited responsibility for the contamination, the financial burden of cleaning the sites falls to the state.

One way governments can deal with this eventuality is to establish a "superfund", a fund either earmarked in general revenues or created by a specific tax on industry. The best known example is the U.S. Superfund, under the 1980 *Comprehensive Environmental Response and Compensation and Liability Act* (CERCLA), and its

1986 amendment, the Superfund Amendment and Reauthorization Act (SARA). The $8.6-billion U.S. Superfund, with an additional $500-million for leaking underground storage tanks, is created primarily from a tax on the chemical and petroleum industry. The EPA is authorized under CERCLA to arrange for or to enforce the clean-up of hazardous waste sites and to claim reimbursement for costs after clean-up is completed. CERCLA provides for ranking sites on the National Priority List (NPL); a tax structure to finance the Superfund; enforcement powers to order clean-up of NPL sites; assessment of liability for reimbursement of costs; and, penalty provisions for uncooperative responsible parties.

In October 1989, the CCME undertook to restore contaminated sites in Canada in conformity with the "polluter pay principle." A joint federal-provincial program totalling $250-million was proposed with $200-million earmarked for decontamination and the remaining $50-million for development and testing of decontamination technology. In the Green Plan, the federal government has since committed itself to work with the provinces and territories on agreements for implementing the program; for clean-up of 30 high-risk contaminated hazardous waste sites by 1995; and, for support of new technologies for site clean-up.

The program is specifically designed for orphan sites where contamination poses an immediate health hazard. Clean-up costs are to be shared equally between the federal and provincial governments. At present, there are approximately 1,000 listed hazardous sites in Canada, 50 of which are abandoned. The success of this proposed program is dependent, however, upon provincial promulgation of laws and regulations enforcing the clean-up of hazardous sites. This provincial role requires uniform criteria for the evaluation, ranking and restoration of priority orphan sites; and for the assumption of provincial and federal responsibility for those contaminated sites that are government owned.

In Quebec, the *Commission d'enquête sur les dechets dangereux* (the Charbonneau Commission) has proposed that the province set up a rehabilitation fund for the clean-up of hazardous sites, funded 65 percent by a tax on corporate income and 35 percent from general state revenues. The Commission also recommended the creation of a fund for particular sites, such as a fund for mining operators to ensure closure and stabilization of land used as a depository for mine tailings, and an obligation for aluminium foundries to restore former dump sites. None of these recommendations has been put into practice at this time.

In Ontario, the new Bill 220 amendment to the *Environmental Protection Act*, passed on June 28, 1990, greatly expands the decontamination powers of the provincial Ministry of the Environment (MOE). The amendments were enacted in part as a response to the recent fire at a tire dump in Hagersville, which burned for days and released toxic smoke and oils into the air, soil and groundwater. Under Bill 220, MOE can issue clean-up orders to any person who causes or permits the discharge of a contaminant that presents a danger to health or the environment. Where private restoration of a site is impossible or not forthcoming, MOE can clean up the site and seek reimbursement from the responsible party. Although the decontamination powers of MOE have been favorably expanded by Bill 220, no

provincial fund has been established for the restoration of abandoned or insolvent sites.

5. Emergency Preparedness

Recent emergencies of human origin include the PCB fire at St.-Basile le Grand, the Nestucca oil spill on the west coast and the tire fire at Hagersville. An estimated 10,000 smaller spills of oils and other hazardous substances occur every year in Canada.[16] Natural emergencies are also frequent and dramatic -- tornados, forest fires threatening remote communities, earthquakes, and gales affecting shipping and coastal populations.

Environmental emergencies raise several issues. The first is that of prevention. Prevention of accidents is obviously preferable to having to react to them. In November, 1990, the report of the Public Review Panel on Tanker Safety and Marine Spills Response Capability made 107 recommendations with an overall emphasis on spill prevention. One recommendation was the replacement of the entire fleet of Canadian tankers and tank barges with double-hulled vessels. Recommendations concerning spill response focused on better response planning, coordination, cooperation between industry, governments at all levels, and the coast guard. Much tighter standards and closer monitoring are another aspect of prevention.

The second issue is response capability. While some emergencies may present no serious threat, others may be beyond present capabilities to control (*viz.*, the Exxon Valdez spill). Inability to deal with oil spills of significant magnitude is noted in the earlier section on Marine Environmental Quality. It took 17 days to put out the Hagersville tire fire. This was something of a record as similar fires have burned for months. Response capability must extend well beyond the immediate disaster. In the case of Hagersville, follow-up has involved cleaning up the 4.6 hectare dump itself, ensuring that soil and aquifers are contamination free, and safely disposing of the 56 million litres of oil (more than was spilled from the Exxon Valdez).[17]

A third issue is who should bear the costs when accidents occur. While it is accepted that the public cannot be saddled with the full costs of natural disasters, the matter is different when disasters are manmade. The Green Plan states the federal view that there must be adequate compensation when Canadians are directly affected by marine pollution incidents, and that compensation coverage for the Arctic must be improved.

Coping with emergencies is primarily a local and provincial responsibility, with federal involvement by invitation from provinces. The federal government has primacy in dealing with emergencies only if federal lands are involved or if the

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[16] *Green Plan*, p.165.

[17] Mary Cann, "Hagersville", *Emergency Preparedness Digest*, April-June, 1990

emergency has international implications. With the growing complexity of human activity, and perhaps an increasing risk of disasters, a pertinent question is how best to arrange an effective national prevention and response system.

The CCME has drafted a "Memorandum of Understanding for Environmental Emergencies" to promote cooperation in the exchange of information, assistance in abatement and clean-up, and the lending of resources to aid an affected province. Essential lists of contact personnel and available resources across the country are a part of this Memorandum.

6. Scientific Research

Most environmental problems of regional, national or international significance will only be resolved successfully by addressing them in the context of the ecosystem in which they occur. This realization has two major implications for policy-making and scientific research. First, despite their internationally recognized pioneering work, Canadian scientists are just beginning to understand how ecological systems function and what keeps them healthy. Within the scientific community, it is therefore understood that many of Canada's environmental legislation, regulations, policies and programs are based on ecologically-limited or questionable assumptions.

Second, a greater scientific research effort needs to be mounted to create the knowledge base to address current and future issues. Although the rising cost of remedying environmental degradation makes the need to implement economically-efficient solutions increasingly urgent, the financial commitment to long term scientific research is diminishing. Because the dividends of scientific research take many years to accrue, the environmental, social and economic benefits of this research are rarely linked to the prior investment made or to the remediation of current problems. The result is that the scientific effort is weakened, particularly in times of budgetary restraint. This weakening undermines sound public policy-making and, ultimately, the protection of environmental quality. It also locks policy-making into a reactive, rather than a preventive, approach.

Fortunately, the elements of an ecosystem-oriented and integrated natural and social science program already exist in Canada within governments and universities and, in specific instances, in the private sector. What is lacking is a nationally-coordinated program to muster and orient this scientific expertise. An important step toward such a program was taken in October, 1990 when the Canadian Environmental Advisory Council (CEAC) organized a workshop of Canadian and American ecologists, environmental scientists and policy analysts to define the nature of a national ecosystem research institute.

The Green Plan recognizes the need to increase the scientific research effort and proposes a five-year environmental science and technology action plan. It does not commit the federal government, however, to a scientific research program based on an ecosystems approach.

RENEWABLE RESOURCE MANAGEMENT

1. Forestry

Canada has approximately 453 million hectares of forest land and one of the world's largest forestry industries. This country possesses ten percent of global productive forests and 25 percent of the world forest market. During the 1980s, approximately 650 million trees were harvested annually, resulting in direct forest industry employment of nearly 270,000 people. In 1989, the export value of Canada's wood, wood products and paper totalled $23-billion.

The economic importance of the forestry industry has overshadowed the ecological importance of forest ecosystems. Management of the industry is predominantly characterized by practices that maximize the value of lumber and ignore the value of the forest as habitat for wildlife, a purifier of air and water, a windbreak across flatlands and protection against erosion and flooding.

The primary method of harvest is the clear-cut, accounting for 90 percent of all logging. The main advantage of clear-cutting is that it best satisfies the economic goal of least cost for maximum dollar return. Each year, approximately 800,000 hectares of softwood species are logged by clear-cut, while only a portion of this harvested land is re-seeded. Less than 50 percent of clear-cut land regenerates naturally to return to a commercially viable forest, and this only over a long time. And 200,000 to 400,000 hectares of forest land will be covered indefinitely with dead timber or non-commercial species. When added to losses due to fire and disease, Canada is annually losing nearly one million hectares of coniferous forest to unstocked or unproductive land.

There is also increasing concern that the present level of harvesting cannot be maintained. Significant shortages of timber are now reported in every province. According to forestry experts, both the clear-cut harvesting method and lack of sustainable management practices have brought about these shortages. To combat depletion, reforestation has increased from 200 million to approximately 750 million seedlings annually. In spite of this increasing effort, the area insufficiently restocked is increasing by 200,000 hectares each year. Due to a diminishing stock, Canada's annual allowable cut ("AAC", defined as the volume of wood that can be harvested without endangering the resource) has dropped steadily from 256 million cubic metres in 1970 to 228 million in 1981 to 204 million in 1986.

Dr. Peter Pearse, a forestry and fisheries expert, when testifying before the House of Commons Environment Committee characterized the problems with current forestry management as follows.

> Forestry especially is based on some three centuries of doctrine on sustainable yield. So you may ask why then are these resources so badly managed and why are the world's fisheries and forests being depleted. The answer is not because we do not know how to do better.

> *It is because we have built in obstacles to better management in the form of market incentives to do otherwise, in institutional arrangements that contribute to that, in the form of government policies that promote over-exploitation,* and in the failure to develop property rights that will protect these resources. [Emphasis added.]

It is not simply the inability to replace a tree for a tree that has led to resource depletion. Over-exploitation is compounded by a market-driven economy which fails to account for the hidden costs of environmental degradation. Each province and the federal government has a forestry act. Most of them, however, do not require sustainable development practices that maintain, in addition to a sustainable yield of the crop, a sustainable future for multiple use and the many essential ecological roles that the forest plays.

New Forest Management Techniques

Future forest management techniques will have to recognize that forestland is no longer purely a source of timber but a resource of multiple uses. After a century during which the rate of harvest well exceeded the rate of growth, new management techniques must eliminate the economic incentives that encourage destruction of the resource. One way in which to accomplish this is to price the resource to eliminate its wasteful or unnecessary use. A second way is to require less destructive harvesting techniques.

A very acrimonious forestry issue is the logging of the old growth forests. The world's greatest temperate rainforest extends from Alaska to California. Many of these trees range from 500 to 2,000 years old. Although not as diversified as the tropical rainforest in the number of plant and animal species, this temperate forest is the most productive forest ecosystem in the world. Estimated biomass of the temperate rainforest reaches 1,163 tonnes per hectare in regions along the coast of British Columbia, compared to approximately 415 tonnes per hectare for stands of mature tropical rain forest. In addition to its productivity, the old growth forest provides habitat for numerous species of plants and animals.

Regeneration of these forests is difficult at best. Poor soils and the dependency of the old growth forest on the recycling of its own organic matter into the nutrients that it needs may make regeneration impossible.

The issue is complicated by protracted battles between the timber industry, environmentalists and government over the appropriate level and method of harvesting, as exemplified by the recent Carmanah Valley forest dispute. Although logging of old growth forests poses many of the same resource management questions as that of regenerated forestland, the disappearance of old growth forest places heightened emphasis on the desirable balance between economic necessity and environmental preservation.

The Goal of Multiple Use

The principle of multiple use recognizes that every Canadian has a stake in the health of the forest sector. The principle requires that Canada's forests be used to benefit all Canadians and to produce a variety of goods and services including timber, water, recreation, wilderness, wildlife habitat and protection against climatic change. Indirect costs such as contamination of air and water must be accounted for in assessing the benefits of resource exploitation.

> *The era of the Canadian forest as the exclusive domain of the forest industry has ended.* In today's increasingly mobile and environmentally sensitive society, there are a number of other publics who hold other values, and these demands must be harmonized into federal forest policy. Only through a broader and more enlightened strategy on the part of the federal government may the needs of the many sectors be satisfied. [Emphasis added.] [18].

The Canadian Council of Forest Ministers recommends that the objectives of the World Conservation Strategy be implemented on the provincial level with assistance from the forest industry itself. The Council has acknowledged that

> guidelines for forest wildlife management have not been given sufficient attention, nor has the equitable distribution of costs involved in obtaining multiple benefits from integrated forest wildlife management.

To remedy past practices, the Council recommends that:

- planning processes be fostered that encourage the...management of...non-timber values such as wildlife, fisheries and recreation; and

- allocations to exclusive uses be subjected to rigorous cost/ benefit analysis.

The duty to foster multiple uses of forestland through improved management techniques is thus a part of our national and provincial forest policies.

2. Parks and Protected Areas

Wilderness areas increasingly are being lost to development: according to the federal government, the amount of wildlands in Canada has declined by four percent in the last 15 years. As a result, the diversity of natural ecosystems is being lost, and the plant and wildlife species that inhabit them suffer. The Atlantic hardwood forest has

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[18] Mr. Glen Blouin, Executive Director, Canadian Forestry Association, Submission before the House of Commons Committee Hearing on Bill C-29, *The Department of Forestry Act*, October 12, 1989, Issue No. 2, page 2:5.

been lost and almost 90 percent of the Carolinian forest. According to industry estimates, two-thirds of the Pacific coastal rainforest has disappeared.

Among other things, protected areas provide scientific benchmarks against which environmental change and degradation can be measured. Because of its size, Canada possesses a large diversity of natural regions – an estimated 350 for the country as a whole. As of May 1990, these regions were mapped out in all jurisdictions except the Northwest Territories, Prince Edward Island, New Brunswick, and Newfoundland. To preserve the full range of Canada's diverse ecosystems, at least one representative area in each natural region would have to be established.

In 1987, the federal task force on national parks advised the federal Minister of the Environment that "the possibility of dedicating wilderness lands to conservation will have all but vanished by the year 2000." To complete the national park system, 18 new parks will be required. The federal government has committed itself to completing the national park system by 2000 and creating five new parks by 1996. This federal contribution will likely cover about one-quarter of the territory requiring protection across Canada.

The provincial protected area system is also incomplete. In Quebec, for example, ten of the 43 natural regions have protected areas, and in Ontario 32 of the 65 natural regions are represented. To date, Canada as a whole has protected representative samples in a little less than one-third of its natural regions. Although there are over 7,000 private and government-owned protected areas in Canada, few are large enough to meet the ecological requirements of the species they support.

So far, Canada has protected only 3.4 percent of its landmass from exploitive activities (logging, mining and hydro) compared to the notional 12 percent of the lands and waters suggested in *Our Common Future*, the report of the World Commission on Environment and Development. The federal Green Plan establishes as Canada's long term goal the protection of 12 percent of the country.

Of parallel concern to the establishment of protected areas is their management. Many existing parks and protected areas are becoming natural islands in a sea of development. Parks often do not include the total range of species because they are not large enough to protect their natural ecosystems from outside influences or have too many interactions with human activities. Since all species interact with and depend on other species, the absence of certain species may cause other wildlife populations to suffer and even collapse. A 1986 study of 14 western North American national parks found that only one area, Canada's four mountain national parks, did not experience any loss of large mammals. Because few agencies responsible for the management of protected areas have consistent monitoring and inventory programs, it is very difficult to know whether they are meeting their mandates.

As wilderness areas become more scarce, land use conflicts will become exacerbated. These conflicts will be extremely difficult to arbitrate on a case-by-case basis because the values at stake are not comparable (e.g., wilderness *vs* the present value of an ore deposit) and the government's disposition of these lands is widely perceived as both a zero-sum game and a possible precedent for future action. The practice of

permitting industrial activities in or adjacent to protected areas will be a contentious issue, as will the further development of tourist facilities in or near these areas. The public is likely to look to its environment ministers to ensure that the health of protected areas is secure, even when another minister may be responsible for the issue.

3. Biodiversity

The diversity of living things plays a vital role in the ecological and biological processes that are essential to life itself. Wild species of plants and animals still provide many of the basic ingredients of our medicines, and the gene pool of the world's species continues to be important to agriculture and to the supply of raw material for genetic engineering. The protection of biodiversity is, therefore, a global imperative today. Biologists estimate that humans destroy from one to three species per day, with some predicting that by the end of the century the rate will accelerate to one per hour, and up to 15 percent of all species now on earth will be gone.

Canada's biodiversity contributes directly to its social and economic well being. In 1981, Canadians spent $4.2-billion on wildlife-related activities, supporting 185,000 jobs, and contributing $5.2-billion to the Gross Domestic Product (GDP) and $2-billion to government revenues. Since the arrival of the Europeans, nine of Canada's distinct populations of animals have become extinct. One hundred and ninety-two Canadian species are currently listed as threatened, endangered or vulnerable. Given that Canada is a northern country with relatively little biodiversity, 192 species is a significant portion of our total biological endowment. Along with the Europeans have come several non-native species of plants and animals. These exotic species have disrupted many of our native ecosystems and usually lead to a decrease in biodiversity. Since exotic species have no natural predators in our ecosystems, they can out-compete and thus out-reproduce native species, as well as decimate the populations of species they feed on.

For example, the introduction of the sea lamprey into the Great Lakes, along with pollution and habitat destruction has led to the total collapse of lake trout populations and the commercial trout fishing industry. These populations have never recovered and the programs to eradicate the sea lamprey cost those jurisdictions surrounding the lakes millions of dollars per year.

Exotic species continue to be introduced into Canada with severe consequences. The zebra mussel in the Great Lakes is the latest example. This species of clam was introduced into the Great Lakes when a foreign ship discharged its ballast. It is rapidly spreading through our largest freshwater ecosystem, clogging water intake pipes, fish spawning beds and invertebrate feeding appendages. The zebra mussel will once again change the species make up of the Great Lakes and will likely result in the loss of more of our native species.

Protecting threatened species will entail more then merely restricting hunting, fishing, and trapping. Today, whole ecosystems, not just a few species within them, are endangered due to the threats of habitat destruction and environmental

contamination. Both these hazards, especially contamination, are concerns for the CCME. As these hazards are increasingly linked to reduced species diversity, public demands to curb pollution and habitat destruction will increase, and these demands will be directed towards environment ministers and their departments.

4. Agriculture

Agriculture raises several environmental issues: soil conservation, the preservation of the productivity of the soil for future generations; environmental damage, the effect that agricultural practices have had on other resource stocks such as wildlands, parklands and waters, and on human health; and damage that other economic sectors may inflict on agriculture.

Soil Conservation

Two factors affect the preservation of the productivity of soils: economic circumstances and farming practices. Economic circumstances are illustrated by the use of subsidies to produce agricultural goods even when there is no market demand for them. The effect of farming practices can be exemplified by "summer fallowing", which though time-honoured, is now believed to be largely responsible for the decline in the organic matter in soils, increased soil erosion and an alarming increase in salt-affected land in the southern prairies. Both economic factors and agricultural practices have led to soil degradation -- erosion and the loss of soil organic matter, chemical deterioration, and physical deterioration. [19]

Environmental Damage by Agriculture

The Inquiry on Federal Water Policy (1985) identified agriculture as *the* major source of non-point pollution of water, with soil erosion by both water and wind of particular significance. The expansion of farmland, the widespread use of chemical fertilizers, herbicides and pesticides, and the deposition of topsoils in ditches, streams and rivers have resulted in damage to lakes and waterways in the form of sediment loadings and chemical contamination. The results have been an extensive requirement for dredging, loss of wetlands and fish stocks, and increasing costs of treating water for human and industrial consumption.

The loss of wetlands due to drainage for agriculture is a major problem. On the prairies, the rate of loss has recently been as high as 18 percent of the remaining wetlands per year. In addition to drainage, physically changing the landscape for agricultural purposes can affect watercourses in a variety of ways -- via clearing riparian vegetation, stabilizing and protecting banks, allowing cattle access to the water for drinking, and installing and operating stand pipes and pump houses for water withdrawal.

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[19] Senate, *Soil at Risk*, 1984.

Agriculture contributes to surface and groundwater contamination via sediment, pathogens, pesticides, organic matter and nutrients. The use of fertilizers and pesticides has increased both absolutely and as a percentage of total farm expenses. Nutrients and animal manure can reduce water palatability, pose health risks and increase eutrophication.

In the Prairie provinces, constant dollar expenditures on fertilizers and pesticides more than doubled between 1966 and 1976, and then more than doubled again in the following decade. Such expenditures, only about $300-million in 1966, had reached over $1.3-billion in 1986. They had gone from being less than seven percent of total farm expenses in 1966, to being more than 16 percent of farm expenses two decades later.

The problem is enormous in scale, scope and complexity, affecting not only agricultural regions, but imposing a large cost on the country as a whole. The combined effects of erosion, acidification, salinization, and compaction may have cost Canadian farmers as much as $1.4-billion in 1987[20], of which some $650-million would be attributable to erosion and salinity on the prairies alone.[21]. Farm degradation has resulted in reduced crop yields and rising production costs. To provide a perspective on the problem from the point of view of agriculture, the landmark 1984 Senate report on *Soil at Risk* began, "Canada is facing the most serious agricultural crisis in its history and unless action is taken quickly, this country will lose a major portion of its agricultural capability."

Environmental Damage to Agriculture

Agriculture is negatively affected by a variety of factors. One is soil contamination. Included here are the disposal of sewage sludge on farmland, which can lead to the deposition of heavy metals such as mercury, cadmium, arsenic, lead, chromium, nickel, copper and zinc. Atmospheric industrial fallout is also a source of heavy metals and other troublesome chemicals in soils. Another factor is urbanization, which has often occurred on prime farmland, pushing agriculture onto less productive land.

Global warming, which could lead to a decline in soil moisture and a variety of other problems requiring major adjustments, is a pending problem. It is unclear, however, whether it should cause farmers to be optimistic or pessimistic. One recent survey suggests that while agriculture is the most climate-sensitive of the main economic sectors, farmers have historically shown an ability to adapt to different climatic zones and changing environmental conditions. The same source states that studies have suggested that greenhouse warming will reduce yields in many crops, but that the associated fertilization effect of higher CO_2 will probably offset any

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20 Environment Canada, *Environment and Development, A Canadian Perspective*, Supply and Services, Ottawa, 1987.

21 Science Council of Canada, 1986, *A Growing Concern: Soil Degradation in Canada*, Supply and Services, Ottawa.

climatic harm over the next century.[22] Other sources dismiss such pronouncements as unduly optimistic, for example:

> It is still argued by some that climate change will have positive as well as negative effects, and that it is a problem with which societies can readily cope. But this ignores the extraordinary rate of change that is now projected, and the possibility of adjusting quickly enough.[23]

5. Fishery

Overfishing, along with wasteful and environmentally damaging fishing practices, have depleted many ocean fish stocks off Canada's coasts. Unless action is taken, stocks in many areas will decline beyond their capacity to regenerate. At the same time, the world's demand for fish is increasing.

The commercial fishing industry wants stable employment and higher incomes based on bigger catches. But the technology we control today allows fish stocks to be quickly decimated. In the case of the northern cod stocks, the advent of offshore fishing technologies after 1950 lead to a four-fold increase in catches by the 1970s. The result was a collapse of the stock, with inshore landings falling to figures lower than any recorded in the previous centuries. Today, scientists believe there is an urgent need to reduce by half the rate at which cod are caught. To achieve the necessary catch reductions, Canada will need both to cut domestic quotas and reach an effective international agreement to control overfishing just outside Canadian waters.

Canada has achieved international agreement on lowered quotas through the North Atlantic Fisheries Commission, but one member, the European Community (EC) has so far refused to comply. The community argues the quotas are not necessary, and has unilaterally set its own quota for cod at a level four times higher than that suggested by Canada.

Off Canada's west coast in the North Pacific, Japan, South Korea and Taiwan employ driftnets to capture squid but these nets also catch salmon and steelhead trout of U.S. and Canadian origin, other fish species, dolphins, seals, whales and seabirds. Driftnets are made of very strong, thin monofilament nylon, are 30 feet deep, and are up to 30 miles long. There are between 1,200 and 1,500 driftnet fishing vessels in the North Pacific, each capable of setting eight to 11 nets. The environmental damage caused by this practice, including declines in fish runs in Canadian rivers and northern fur seal, dolphin, and seabird populations, has not been properly documented.

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22 William D. Nordhaus, "Count before you leap", *The Economist*, July 7, 1990, p. 22

23 Lester R. Brown, Christopher Flavin, and Sandra Postel, "A World at Risk", *State of the World, 1989*, World Watch Institute, p.10.

The United States has enacted legislation that requires it to negotiate for observer and enforcement programs with Japan, South Korea and Taiwan. If negotiations fail, the President is empowered to begin trade sanctions against these nations. As a result of concerted international criticism, the UN General Assembly passed Resolution 44/225 in December 1989. Major policy and regulatory changes are called for by the end of 1992, including a ban on driftnets. The federal government of Canada is committed to taking all further action necessary to eliminate driftnet fishing. CCME already strongly supports provincial and federal government efforts to convince foreign governments of the serious environmental consequences of overfishing off the Atlantic and Pacific Coasts.

> What we're facing is roughly the equivalent of closing down the entire auto industry in the province of Ontario.
>
> -Premier Clyde Wells,
> *The Ottawa Citizen*, February 3, 1990

The success on the international scale has shifted public attention to domestic, inshore fisheries. A new target is trawl fishing and the use of bottom draggers to catch groundfish. In California, Proposition 132 (passed in November 1990) bans inshore gillnet fishing. In British Columbia, Greenpeace recently announced that its next target will be gillnets and bottom draggers. This issue presents a new debate for environmentalists, fishermen and government.

At ECO '92, Canada will pursue four objectives related to the fishery:

- an international sustainable fisheries strategy;
- an international framework for controlling land-based forms of ocean pollution;
- a strengthening of the provisions of the London Dumping Convention; and
- a global ocean observing system.

ENERGY

The environmental consequences of energy use are pervasive, playing an important, if not dominant, role in many of the key environmental issues of the day. The most serious pollution problems globally – the warming of the earth's climate, the depletion of the ozone layer, the acidification of the environment, and urban air pollution – are all attributable to a large degree to the combustion of fossil fuels. In Canada, these fuels contribute 41 percent of the sulphur oxides and 85 percent of the nitrous oxides released, the two most important ingredients in acid rain. However,

other sources of energy are not without environmental consequences such as the massive ecosystem changes that accompany the construction of large hydroelectric projects and the still unresolved problem of disposing radioactive wastes from nuclear power generation.

In its report, the Brundtland Commission noted that "choosing an energy strategy inevitably means choosing an environmental strategy." The Commission went on to argue that "a safe and sustainable energy pathway is crucial to sustainable development; we have not yet found it".

There appears to be a significant degree of consensus among Canadians on the importance of markets in allocating energy resources. Virtually all energy stakeholders appear to welcome policy thrusts toward a more market-oriented and efficiency-driven energy policy. In this view, government should intervene in the allocative process only to correct serious market imperfections or failures. Unfortunately, this reliance on market forces has failed to properly account for environmental costs and to make industrial polluters pay for the environmental damage for which they are responsible. The energy sector, therefore, finds itself at the centre of the development of regulations, technologies and practices to minimize environmental, health and safety risks.

> Environment should be accorded the same importance as other economic and social goals in the planning, development and use of energy.
>
> -Report on the Energy Options Process, 1988

The environmental implications of the Free Trade Agreement should also be noted. Inasmuch as the agreement formalizes the existence of an energy market and accelerates the rate of Canadian resource development to meet North American needs, it can be expected to increase the environmental costs resulting from energy development.

1. Energy Conservation

With about 0.5 percent of the world population, Canada accounts for two percent of the world's energy use. Canada is thus one of the most intensive users of energy in the world. Data from the International Energy Agency show that in 1985 Canada used 70 percent more energy per unit of GDP than the average of the United States and four major European economies. Although some of this difference is explained by geography and climate, critics of Canadian energy policy add another reason for it: a historical bias by policy-makers for increasing the supply of energy to meet demand. Indeed, the rapid economic growth of the western economies and Japan after World War II was facilitated by cheap and abundant energy supplies. This growth began to slow, however, in the 1970s when international oil supplies became more expensive.

Since the 1973 oil crisis, and, particularly, since the 1979 Iranian crisis, all industrial nations have succeeded in curtailing their use of energy. In fact, during this period, Canadians "found" twice as much energy through energy conservation than was added in new oil, gas and electricity supplies. As a result of government-sponsored energy conservation programs and the impact of higher prices, the energy intensity of the Canadian economy -- that is, the amount of energy needed to produce one dollar of GNP -- has dropped by about 14 percent between 1973 and 1986. Although substantial, this drop is only two-thirds of what other member states of the OECD realized over the same period. During the second half of the 1980s, the average rate of improvement in efficiency slowed down again; also there are wide differences among provinces in their approach to energy conservation.

The potential for further energy efficiency gains in Canada is believed to remain very large although experts disagree over its precise scope. In a recent study, the International Energy Agency estimated "conservatively" that further efficiency gains of 30 percent on average are feasible among its member states. For Canada, specifically, Dr. John Robinson of the University of Waterloo has calculated an untapped energy conservation potential of 43 percent. Similarly, a 1988 update of the soft energy path analysis first carried out in 1983 by Friends of the Earth indicates that it is entirely possible for Canada to achieve the 50 percent reduction in primary energy intensity suggested by the World Commission for Environment and Development (WCED) as a target for industrial nations.

A number of alternative energy initiatives have been undertaken during the past two decades by the federal government in order to modify future energy requirements and to reduce atmospheric emissions. These measures have included the promotion of propane and natural gas as cleaner vehicle fuels, and the technological development of non-traditional sources of energy such as solar energy, wind power, geothermal energy and bioenergy.

The federal, provincial and territorial governments have also endeavoured to reduce household and commercial energy use in the form of heat, lighting and motive power, through various other initiatives. These have included improved insulation standards for new building construction and subsidies to upgrade insulation in older buildings; conversion from oil heating to cheaper and cleaner gas heating; introduction of more efficient furnaces; a shift to smaller automobiles with better fuel efficiency; and improved utilization of industrial waste heat.

The provincial hydroelectrical utilities will have a major role to play in encouraging increased energy efficiency. Although some utilities, notably in British Columbia, Ontario and Quebec, have already launched energy conservation programs, these remain far less aggressive than many similar programs found in the United States. Regulatory changes will be required to encourage utilities to engage in least-cost energy planning.

Advanced energy efficiency measures for new residential buildings have been actively pursued by the federal government through the development of the R-2000 house and the establishment of the federal Measures for the Conservation of Energy

in New Buildings. So far, Quebec is the only province which has incorporated these advanced measures into its provincial building code.

Such energy conservation measures have helped to slow the growth in overall energy use. While between 1974 and 1980, energy use grew by an average of 2.3 percent annually, the rate dropped to about one percent per year in the first half of the 1980s. Not surprisingly, official predictions of future Canadian energy demands have also fallen from a 4.4 percent annual increase, projected in 1973, to one of between 1.5 and 1.9 percent in the National Energy Board's 1986 report. A recent NEB demand study, for the period 1987-2005, concluded that energy demand will likely grow at a rate lower than the overall rate of economic growth.

Table 4

INTERNATIONAL COMPARISON
Energy Use Per Capita
1987

COUNTRY	ENERGY USE GIGAJOULES PER CAPITA
Canada	291
United States	280
United Kingdom	150
France	109
West Germany	165
Italy	105
Japan	110

SOURCE: *World Resources Report, 1990-91.* Washington: World Resources Institute

2. Nuclear Power Generation

Electrical energy produced by nuclear fission has remained an issue so controversial that unemotional, objective assessment is almost impossible. Public mistrust of the safety of nuclear installations, and fear of the consequences of nuclear mishaps decidedly exist. Nuclear power stations can produce vast amounts of electrical energy without adding to global warming and they operate without the massive loss of land areas or the toxic methyl-mercury accumulations that usually accompany large hydroelectric developments. However, the disposal of accumulated radioactive fuel waste and the wastes associated with uranium mining are of concern.

More than 15 percent of Canada's electricity is produced from nuclear power. Several atomic plants operated by Ontario Hydro generate the bulk of this capacity. N.B. Electric Power Commission and Hydro-Québec also manage one station each. All nuclear-generated electric power in Canada is produced by CANDU reactors, designed by Atomic Energy of Canada Limited (AECL). Although there have been no serious accidents involving CANDU reactors anywhere in the world, public mistrust of atomic energy has been fuelled by the Three-Mile Island accident and, in particular, the Chernobyl nuclear reactor disaster.

The safe disposal of radioactive wastes has also continued to be of public concern, and has been examined by Environmental Assessment Review Process panels and federal task forces. Currently, an EARP panel is reviewing options for nuclear fuel waste management, including AECL's preferred concept of sealing accumulated fuel waste in underground vaults in stable plutonic rock formations.

Environmental organizations such as Greenpeace, Energy Probe and Friends of the Earth have consistently opposed the development of the nuclear power industry, including AECL's waste burial concept. These groups view it as morally reprehensible that future generations should be forced to cope with accumulations of dangerous radioactive substances so as to enable the present society to continue its wasteful ways.

Such arguments recently have led the Ontario government to place a three-year moratorium on new nuclear development projects, and to require Ontario Hydro to divert $240-million into an energy conservation and efficiency program. Premier Bob Rae considers the success of conservation in cutting electricity demands to be the key to eliminating the need for more nuclear plants.

The use of nuclear energy has to be viewed in the context of many other environmental, economic, social and political issues of current importance. These include:

- the role of the NEB and provincial electrical utilities in exporting electricity and in shaping national energy policies;
- human-induced climate change, specifically, the phenomenon of global warming;
- energy conservation as an element in the thrust toward sustainable resource development;
- public apprehension regarding nuclear energy use;
- the environmental organizations' resolve to eliminate the nuclear option;
- the current opposition of northern native organizations to uranium mining in areas involved in land claims negotiations.

3. Frontier Oil and Gas Development

Development of frontier oil and gas resources continues to be a controversial topic, involving a host of stakeholders. The remote locations, complex technology and large expenditures confer megaproject status to nearly every individual endeavour, thus ensuring close scrutiny from media, special interest groups and the general public. Furthermore, project locations in the Arctic or offshore imply that frontier oil and gas development activities, potentially, have serious implications for the protection of the environment, and for the social and economic well-being of the areas' residents.

Frontier oil and gas development has to be assessed in the context of: federal/ provincial/ territorial relationships -- specifically, the devolution of federal responsibilities to the territorial governments, and the joint resource management and revenue sharing agreements; northern native land claims settlements and their implementation; future Canadian energy options and demand scenarios; the world oil situation; and the implications of global climate change.

In the Atlantic region, the $5.6-billion Hibernia Project (Mobil Oil and Partners), located on the Grand Banks, has received all required approvals and is scheduled to start production in 1996. The endeavour is expected to produce 83 million cubic metres of crude oil during a 15-year extraction period.[24]. The $565-million Panuke/Cohasset Project (LASMO and Nova Scotia Resources), located near Sable Island, has also been approved. It is expected to produce 5.6 million cubic metres of very light oil over a 6-year period, starting in 1993. [25].

Beaufort Sea exploration is at present relatively inactive, in part through a dispute involving COGLA and the Environmental Impact Review Board, set up under the Inuvialuit Final Agreement. A consensus -seeking steering committee has been formed to try to resolve this situation.

For the Mackenzie Delta, three competing proposals to bring natural gas to southern markets by means of a pipeline are pending before the National Energy Board. The NEB has recommended that export to the United States of 11 trillion cubic feet of natural gas from the Delta be authorized. Pipeline hearings are unlikely before 1992.

The primary area of responsibility for frontier oil and gas development is in the federal sphere through ownership of resources on federal lands and the offshore. However, management roles are now shared with Nova Scotia and Newfoundland through the respective accords. Discussions are underway for a similar Northern Accord with the territorial governments. A Pacific Accord with British Columbia is also likely in the next few years. Key players are the energy, finance and environment ministers for Canada, Newfoundland, Nova Scotia, British Columbia, Yukon and the Northwest Territories; the hydrocarbon industry; provincial utility corporations; native organizations; and environmental groups.

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[24] *Decision 90.01*, Can.-Nfld. Offshore Petroleum Board, 1990.

[25] *Annual Report 1989-90*, Can.-N.S. Offshore Petroleum Board, 1990.

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MEETING OF THE CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT (CCME)

Cooperative Principles for Environmental Assessment

CCME

HALIFAX, Nova Scotia
May 6, 1991

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CCME

Canadian Council of Ministers of the Environment
Le Conseil canadien des ministres de l'environnement

COOPERATIVE PRINCIPLES FOR ENVIRONMENTAL ASSESSMENT

1 General

It is critical that the environmental assessment process be cost effective, provide for a minimum of uncertainty and duplication and encourage cooperative action.

2 Assessment Timing

Environmental impacts should be assessed prior to any irrevocable decisions being made.

3 Common Elements

In order to ensure consistent and effective environmental assessment across the country, several common elements should be integral to each process:

Public Participation

Accessible information, consistent terminology, the opportunity for public involvement (such as public hearings, public meetings, open houses, mediation or other mechanisms) and participant assistance, whether financial or technical, are important to encourage public participation in the environmental assessment process;

Scope of the Review

Recognizing that the scope of assessment will vary with the size and complexity of the project, environmental assessment should address as appropriate:

- public comments and concerns
- the biophysical environment
- socio-economic considerations
- project need and justification

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- alternatives means of carrying out a project
- cumulative effects
- follow-up requirements
- sustainable development
- mitigation measures

Proponent Pays

Preparation of the environmental assessment statement, mitigation measures and follow-up programs will be undertaken at the expense of the proponent in conformity with the terms of reference or guidelines set down by the regulator. The proponent may also be responsible for costs related to public consultation.

Project approval/Rejection

Each environmental assessment process should result in the provision of information to allow the decision maker to approve, modify or reject the project;

Issue Identification

Issues should be defined as early as possible in the process, in consultation with the public and other affected jurisdictions, to ensure that they are addressed in a timely and effective manner.

Innovative Procedures

Each process should have provision for innovative procedures to allow the process to remain both effective and efficient under a variety of circumstances, e.g. mediation, class assessments, compensation, performance bonds, development of standards and guidelines, cooperative assessments, mandatory study lists.

4 Decision Making

Decisions arising from environmental assessments will be made by each jurisdiction within the limits of its legislative competence. Decisions cannot be delegated to another jurisdiction.

5 Consistent Application

To avoid jurisdictional or "forum" shopping, it is important that there be consistent application of the environmental assessment process. Projects

which are likely to have significant environmental impacts should be subject to consistent environmental assessments wherever they are located.

6 Cooperative Mechanisms

The necessity for federal/provincial and inter-provincial cooperation in the environmental assessment process must be recognized and all jurisdictions should adopt a range of cooperative mechanisms to facilitate harmonized environmental assessment such as:

Consultation

Consulting with other jurisdictions early in the process to determine of the extent and scope of the environmental assessment;

Process Flexibility

Using another jurisdiction's environmental assessment process or a joint process, where appropriate, as the information gathering mechanism, (recognizing that the decisions must still be taken by the respective jurisdiction);

Administrative Agreements

Developing administrative agreements between jurisdictions, to set out the principles and protocols for cooperation on both a general and project specific basis; and to include such topics as project screening, formation and membership of panels, cost sharing arrangements , hearing procedures, and participant assistance;

Communication

Establishing clearly defined points of contact between environmental assessment offices to ensure that any administrative or procedural difficulties can be dealt with quickly and effectively;

Scope and Timing

Establishing the scope of an assessment and to set reasonable time frames for the environmental assessment process; and

Public Participation

Designing mechanisms for public participation to allow for cooperative environmental assessment processes.

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MEETING OF THE CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT (CCME)

Communiqué

HALIFAX, Nova Scotia
May 6, 1991

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CCME

Canadian Council of Ministers of the Environment
Le Conseil canadien des ministres de l'environnement

COMMUNIQUÉ D' **INFORMATION** RELEASE

HALIFAX, May 6, 1991 -- The Canadian Council of Ministers of the Environment under the chairmanship of the Honourable John G. Leefe, Minister of Environment for Nova Scotia, reconfirmed its commitment today to partnership -- among governments and between governments and non-government groups -- in addressing Canada's environmental priorities.

Environmental Assessment

The Council of Ministers adopted cooperative principles for environmental assessment and review processes across the country. Adoption of these principles is an important step in assisting governments to carry out effective, predictable assessment processes. These principles had earlier been adopted by the environment ministers for the western provinces and the two territories as part of the Western Accord on Environmental Cooperation in Regina, Saskatchewan in February 1991. The principles will form the basis of future discussions on the federal government's Bill C-78 and shared efforts in environmental assessment across the country. The Council of Ministers agreed on the necessity of moving forward with the new federal legislation.

Green Plan

Ministers expressed support for the principles of Canada's Green Plan and development of partnerships to realize Green Plan initiatives. Ministers reviewed progress with the implementation of the Green Plan and addressed ways to expedite information sharing and coordination between the two orders of government.

Atmospheric Issues

The Council of Ministers agreed that advice and counsel will be sought from all provinces and territories, and interested stakeholders, on the international Convention on Climate Change. Ministers noted that global warming is an important and complex issue, and that there is a need for strong linkages between the international and domestic aspects of the issue. On the issue of

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acid rain, the Council of Ministers considered how to meet and maintain the national cap of 3.2 million tonnes of SO_2 emissions by the year 2000. Regarding ground level ozone, CCME released the NO_x/VOC Management Plan for controlling urban smog across the country.

UNCED

Ministers reviewed plans for Canada's preparation for and participation in the 1992 United Nations Conference on Environment and Development (UNCED). In particular, ministers agreed that the provincial and territorial governments would be involved in Canada's preparations for UNCED and would be provided with the opportunity to participate in the conference.

Environmental Education

The Council of Ministers accepted a recommendation put forward by Alberta that member governments share environmental education materials and programs.

Annual Report and Next Meeting

CCME released its Annual Report at the meeting. The report chronicles the restructuring and strengthening of the organization that has taken place over the past year.

Ministers decided that the next meeting of the Canadian Council of Ministers of the Environment will be in Halifax, Nova Scotia in November 1991.

- 30 -

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Canadian Council of Ministers of the Environment
Le Conseil canadien des ministres de l'environnement

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BACKGROUND

The Canadian Council of Ministers of the Environment (CCME) is the major intergovernmental forum in Canada for discussion and joint action on environmental issues of national, international and global concern. Environment ministers from each of the ten provinces, the federal government, and the two territories participate in council meetings at least twice a year. They discuss environmental issues, exchange information, make decisions and establish policy for work to be carried out under the auspices of CCME.

The presidency of CCME and other official posts are rotated annually among member governments.

Early in 1990 CCME began a major restructuring in order to more effectively address the large number of important environmental issues facing the country. A new, streamlined organization enables member governments to respond quickly to emerging issues, set national environmental strategies and develop long-term plans.

Between meetings of the Council of Ministers, the work of CCME is managed by a Deputy Ministers Committee and a full-time Secretariat. The Secretariat, in Winnipeg, Manitoba, provides administrative, technical and policy support to the Council of Ministers and various CCME committees. Two permanent intergovernmental steering committees provide ongoing advice to the Deputy Ministers Committee and coordinate specific CCME projects assigned to intergovernmental task groups.

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RÉUNION DU CONSEIL CANADIEN DES MINISTRES DE L'ENVIRONNEMENT (CCME)

Principes de collaboration pour l'évaluation environnementale

CCME

HALIFAX (Nouvelle-Écosse)
Le 6 mai 1991

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Canadian Council of Ministers of the Environment
Le Conseil canadien des ministres de l'environnement

PRINCIPES DE COLLABORATION POUR L'ÉVALUATION ENVIRONNEMENTALE

1 Généralités

Il est primordial que l'évaluation environnementale soit la plus économique possible, réduise l'incertitude et le double emploi à leur plus simple expression et favorise la coopération.

2 Exécution préliminaire

Les études d'impact doivent être entreprises avant que des décisions irrévocables soient prises.

3 Éléments communs

Afin que les évaluations environnementales soient effectuées de manière efficace et uniforme à l'échelle du pays, chaque processus doit comporter les éléments suivants :

Participation du public

Pour favoriser la participation du public au processus d'évaluation environnementale, les facteurs suivants sont essentiels : des renseignements disponibles, une terminologie uniforme, des possibilités de participation du public (telles que les audiences et les réunions publiques, les séances portes ouvertes, la médiation, etc.) et une aide aux participants (financière ou technique).

Portée de l'examen

Puisque la portée de l'évaluation est fonction de la taille et de la complexité du projet, l'évaluation environnementale doit porter sur les points suivants, au besoin :

. les observations et les préoccupations du public;
. les écosystèmes;
. les considérations socio-économiques;

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. la raison d'être du projet;
. les moyens de rechange pour réaliser le projet;
. les effets cumulatifs;
. le suivi;
. le développement durable;
. les mesures d'atténuation.

Promoteur payeur

La déclaration d'évaluation environnementale, les mesures d'atténuation et le suivi seront à la charge du promoteur conformément aux conditions ou aux lignes directrices précisées par les instances de réglementation. En outre, le promoteur devra peut-être prendre à sa charge les frais inhérents à la consultation du public.

Approbation ou rejet du projet

Chaque processus d'évaluation environnementale doit fournir suffisamment de renseignements pour permettre au décideur d'approuver, de modifier ou de rejeter le projet.

Questions à être étudiées

En consultation avec le public et les gouvernements intéressés, les questions à être étudiées doivent être définies dès que possible au cours du processus afin de s'assurer qu'elles sont réglées de manière efficace et opportune.

Modalités innovatrices

Chaque processus doit prévoir l'existence de modalités innovatrices qui lui permettront de demeurer efficace quelles que soient les circonstances (par exemple, la médiation, les évaluations de catégorie, l'indemnisation, les garanties de rendement, l'élaboration de normes et de directives, les évaluations menées conjointement, les listes d'études obligatoires).

4 Prise de décisions

A partir des résultats des évaluations environnementales, chaque gouvernement prendra les décisions appropriées compte tenu de sa sphère de compétence législative. La prise de décisions ne peut être confiée à un autre gouvernement.

5 Application uniforme

Pour éviter d'offrir un choix de processus, il importe que les processus d'évaluation environnementale soient appliqués de manière uniforme. Les projets susceptibles d'avoir des

répercussions écologiques considérables doivent être assujettis à des évaluations environnementales uniformes, quelle que soit leur position géographique.

6 Mécanismes de collaboration

On se doit de reconnaître la nécessité d'une collaboration fédérale-provinciale et interprovinciale en matière d'évaluation environnementale, et tous les gouvernements doivent adopter une gamme de mécanismes de collaboration en vue de favoriser l'harmonisation des évaluations environnementales, notamment :

Consultation

Consulter d'autres gouvernements dès le départ afin de déterminer la portée de l'évaluation environnementale.

Souplesse du processus

Faire appel au processus d'évaluation environnementale d'un autre gouvernement ou à un processus conjoint lorsqu'il y a lieu pour recueillir des renseignements (en reconnaissant que les décisions doivent toujours être prises par le gouvernement approprié).

Ententes administratives

Conclure des ententes administratives entre gouvernements pour définir les principes et les protocoles de collaboration générale ou particulière (projets). Les ententes comporteraient les éléments suivants : l'évaluation préliminaire des projets, la création et la composition des commissions, les modalités de partage des coûts, les audiences et l'aide aux participants.

Communication

Créer des liens de communication précis entre les bureaux d'évaluation environnementale pour s'assurer que tous les problèmes de nature administrative ou d'organisation seront réglés rapidement et efficacement.

Portée et calendrier

Déterminer la portée d'une évaluation et établir un calendrier raisonnable pour le processus d'évaluation environnementale.

Participation du public

Concevoir des mécanismes de participation du public pour favoriser le déroulement coopératif des processus d'évaluation environnementale.

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RÉUNION DU CONSEIL CANADIEN DES MINISTRES DE L'ENVIRONNEMENT (CCME)

Communiqué

HALIFAX (Nouvelle-Écosse)
Le 6 mai 1991

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Le Conseil canadien des ministres de l'environnement

COMMUNIQUÉ D' **INFORMATION** RELEASE

HALIFAX, le 6 mai 1991 -- Présidé par l'honorable John G. Leefe, ministre de l'Environnement de la Nouvelle-Écosse, le Conseil canadien des ministres de l'environnement a réitéré aujourd'hui son engagement de favoriser le partenariat entre pouvoirs publics et groupes non gouvernementaux pour s'attaquer aux problèmes prioritaires du Canada en matière d'environnement.

Évaluation environnementale

Le Conseil des ministres a approuvé des principes de collaboration pour les processus d'examen et d'évaluation en matière d'environnement à l'échelle du pays. L'adoption de ces principes constitue une étape importante qui permettra aux gouvernements de mettre en oeuvre des processus d'évaluation efficaces et prévisibles. Les principes avaient été approuvés en février 1991, à Regina (Saskatchewan), par les ministres de l'environnement des provinces de l'ouest et des deux territoires dans le cadre du Western Accord on Environmental Cooperation. Les principes seront à la base des futures discussions qui porteront sur le projet de loi fédéral C-78 et sur les efforts communs déployés à l'échelle du pays en matière d'évaluation environnementale. Le Conseil des ministres a convenu de la nécessité de faire progresser la question de la nouvelle loi fédérale.

Plan vert

Les ministres appuient les principes du Plan vert national et la création de partenariats en vue de la réalisation des mesures du Plan vert. Les ministres ont étudié les progrès accomplis en ce qui concerne la mise en oeuvre du Plan vert et ont discuté des moyens susceptibles de hâter l'échange de renseignements et la coordination entre les deux ordres de gouvernement.

Problèmes atmosphériques

Le Conseil des ministres a convenu qu'on recueillera les avis et les conseils de l'ensemble des provinces, des territoires et des intéressés en ce qui concerne la Convention internationale sur le changement climatique. Les ministres ont remarqué que le réchauffement planétaire représente une question importante et complexe, et ils ont signalé qu'il importe de relier les aspects internationaux et nationaux du problème. En ce qui concerne les

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pluies acides, le Conseil a étudié les moyens d'atteindre et de respecter d'ici l'an 2000 la limite nationale de 3,2 millions de tonnes de SO_2. En ce qui a trait à l'ozone de la basse atmosphère, le CCME a rendu public le Plan de gestion pour les oxydes d'azote (NOx) et les composés organiques volatils (COV) qui permettra de lutter contre le smog (ozone de la basse atmosphère) au pays.

Conférence des Nations Unies sur l'environnement et le développement

Les ministres ont examiné les plans qui se rapportent aux préparatifs du Canada en prévision de sa participation à la Conférence de 1992 des Nations Unies sur l'environnement et le développement. Ils ont notamment convenu que les gouvernements provinciaux et territoriaux participeraient aux préparatifs fédéraux et auraient la possibilité de participer à la conférence.

Sensibilisation aux problèmes de l'environnement

Le Conseil des ministres a approuvé une recommandation de l'Alberta selon laquelle les gouvernements membres devraient partager les documents et les programmes de sensibilisation aux problèmes environnementaux.

Rapport annuel et prochaine réunion

Le CCME a rendu public son Rapport annuel au cours de la réunion. Le rapport traite de la restructuration et du renforcement de l'organisation qui ont eu lieu au cours de l'année.

Les ministres ont décidé que la prochaine réunion du Conseil canadien des ministres de l'environnement se tiendra à Halifax (Nouvelle-Écosse) en novembre 1991.

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HISTORIQUE

Le Conseil canadien des ministres de l'environnement (CCME) est la principale tribune intergouvernementale au Canada qui permette la discussion et la mise en oeuvre d'initiatives conjointes sur des questions environnementales d'envergure nationale, internationale et mondiale. Au moins deux fois par an, les ministres de l'environnement des dix provinces, du gouvernement fédérale et des deux territoires se réunissent pour discuter de problèmes environnementaux, échanger des renseignements, prendre des décisions et élaborer des lignes directrices pour les projets qui doivent êtres exécutés sous les auspices du CCME.

Les membres du Conseil occupent chacun à leur tour, pour un mandat d'un an, le poste de président et les autres postes officiels.

Au début de l'année 1990, le CCME entreprit de se restructurer à fond afin de pouvoir se pencher de façon plus efficace sur les nombreuses et importantes questions environmentales auxquelles doit faire face notre pays. Cette réorganisation du Conseil permet aux membres de prendre des mesures rapides lorsque de nouveaux problèmes surgissent, d'établir des stratégies environnementales de portée nationale et de faire des plans à long terme.

Entre les réunions du Conseil, les affaires de celui-ci sont gérées par un Comité des sous-ministres et un Secrétariat à plein temps établi à Winnipeg, au Manitoba, qui est chargé de fournir au Conseil et à ses divers comités un appui administratif et technique, ainsi que des services de soutien pour l'élaboration des politiques. Deux comités directeurs permanents conseillent le Comité des sous-ministres et coordonnent certains projets confiés à des groupes de travail intergouvernementaux.

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MEETING OF THE CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT (CCME)

RÉUNION DU CONSEIL CANADIEN DES MINISTRES DE L'ENVIRONNEMENT (CCME)

HALIFAX, Nova Scotia
May 6, 1991

HALIFAX (Nouvelle-Écosse)
Le 6 mai 1991

LIST OF PUBLIC DOCUMENTS — **LISTE DES DOCUMENTS PUBLICS**

DOCUMENT NO. / NUMÉRO DU DOCUMENT	SOURCE / ORIGINE	TITLE / TITRE
830-392/006	CCME	1991 Environmental Scan - Draft
830-392/007	CCME	Cooperative Principles for Environmental Assessment Principes de collaboration pour l'évaluation environnementale
830-392/010	CCME	NO_x/Voc Management Plan Plan de gestion pour les NO_x/VOC To obtain a copy: / Pour obtenir un exemplaire : Canadian Council of Ministers of the Environment 326 Broadway, Suite 400 WINNIPEG, Manitoba R3C 0S5 Tel.: (204) 948-2090
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FEDERAL-PROVINCIAL-TERRITORIAL MEETING OF THE COUNCIL OF SCIENCE AND TECHNOLOGY MINISTERS

National Science and Technology Framework for Action

Council of Science and Technology Ministers Secretariat

SASKATOON, Saskatchewan
May 9, 1991

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NATIONAL

SCIENCE AND TECHNOLOGY

FRAMEWORK

FOR ACTION

Council of Science and Technology Ministers

May 1991

TABLE OF CONTENTS

EXECUTIVE SUMMARY i

INTRODUCTION 1

PRINCIPLES 2

NATIONAL COMMITMENT 4

ELEMENTS 7

LOOKING AHEAD 16

EXECUTIVE SUMMARY

This Framework for Action is the first of its kind to address such a range of actions on S&T issues affecting the nation. It is meant to be a new point of departure for ongoing discussion and action. It is intended to provide direction for all stakeholders and to complement other present and future initiatives. It is a framework, including a series of discrete actions stakeholders can take while work on a more comprehensive framework unfolds.

The Council of Science and Technology Ministers strongly encourages all stakeholders to develop work plans for the elements of this Framework and to consult and collaborate in their undertakings.

The challenge

All of Canada must show a strong national commitment to improving its knowledge and skills base in science and technology if it is going to compete successfully in the international marketplace of the 21st century. This Framework calls for more active involvement, consensus building and a higher level of collaboration among all S&T stakeholders, without compromising crucial support of basic, mission-oriented and social science research and regulatory processes. It presents the goals and underlying principles inherent to our success, and then builds upon them to develop elements for implementation.

The goals

The elements for implementation recommended by the Council are in keeping with three goals:

- increasing private sector market-driven and applied R&D through individual leadership, partnerships, investment and other means;

- enhancing the innovation, acquisition, transfer, diffusion and adoption of best-practice product and process technologies in the Canadian manufacturing, resource and service sectors; and

- stimulating growth and creating enterprises in Canada, particularly small and medium-sized businesses, using science, technology and innovation to produce and successfully market higher value-added goods and services nationally and internationally.

The elements

To enhance R&D, the Council proposes that initiatives be undertaken to:

1. enhance the level and effectiveness of collaborative R&D, and increase strategic and enabling technology research;

2. improve industry infrastructure; and

3. identify future market opportunities, weaknesses, strengths and potential in R&D.

To stimulate innovation, technology transfer, diffusion and adoption in industry, the Council proposes that initiatives be undertaken to:

4. enhance the overall core innovation support effort;

5. support an unsolicited R&D proposals program reflecting future S&T directions;

6. ensure government procurement practices support regional technology development and supplier initiatives;

7. examine investment and taxation issues in order to maximize the effectiveness of the S&T effort;

8. encourage companies engaged in regional and national natural resource activities to undertake R&D and innovation, including product and process innovation;

9. stimulate environmental R&D and initiate adoption of specific measures for pollution-reducing technologies;

10. encourage engineering and technical personnel in assisting companies to initiate R&D and to acquire, transfer, diffuse and adopt technology;

11. enhance Canada's international collaboration on technology and knowledge transfer;

12. develop more university-industry and college-industry linkages;

13. help industry, particularly small and medium-sized businesses, to acquire and adopt to advanced technology; and

14. improve the dissemination of foreign and Canadian technology transfer and patent data, R&D intelligence, S&T trends and national standards.

To develop human resources, the Council will:

15. forward its perspectives on S&T human resource requirements to the Council of Ministers of Education, Canada and other stakeholders to ensure its priorities are addressed; and

16. develop industry, S&T work force and education-related proposals for submission to the Council of Ministers of Education and the federal government, and identify initiatives that stakeholders can undertake alone or in partnership.

To promote a science culture, the Council proposes that initiatives be undertaken to:

17. make National Science and Technology Week a major annual cooperative event in which federal, provincial and territorial governments and other stakeholders all play an active role;

18. develop public awareness and marketing strategies that: encourage professionals and students to consider business opportunities and careers in science, technology and engineering; improve media coverage; and recognize outstanding teachers and counsellors.

INTRODUCTION

Canada faces a daunting challenge in responding to increasing globalization. There is every reason to believe that the key competitive challenges facing Canada this decade will be technologically driven. Our science and technology knowledge base, skills base and culture must be improved if we are going to produce goods and services that meet the test of international markets and enhance the real income of Canadians.

This *National Science and Technology Framework for Action* has been developed by the Council of Science and Technology Ministers to provide direction in meeting these science and technology imperatives. It is Canada's first statement on a long-term action plan for science and technology. It represents the first time federal, provincial and territorial governments have not only set out principles and goals, but also measures that various stakeholders will choose from and contribute to as appropriate. This Statement is the first product of a continuing process that will bring substance to our inherent goals.

All of Canada needs to be involved in this undertaking. To achieve national stature, all science and technology stakeholders, i.e., business, labour, all levels of government, universities and colleges, related research institutions and associations and individual Canadians, must demonstrate their leadership, commitment and support, both alone and in partnership with one another.

PRINCIPLES

The Council has recognized two underlying points. The first is that this Framework for Action has its roots in the National Science and Technology Policy. This assumes that it is an initiative that science and technology stakeholders support and are committed to implementing over time. The second is that it aims to complement the body of knowledge, advice and proposals put forward in recent years by numerous organizations and associations representing various segments of the industrial and research communities.[1] Initiatives undertaken by these groups have been important catalysts and continue to be of immeasurable value in focusing the debate on science and technology issues and proposed responses.

Commonly understood principles are important for effective implementation of the Framework. The Council has therefore adopted the following principles to guide the effort.

1. National commitment and partnership engaging all stakeholders are key to achieving the full potential of the Framework.

2. The improvement of Canada's capabilities and performance in the areas of R&D, innovation and technology adoption hinges on the active support and investment of industrial leaders complemented by the policy instruments of governments.

3. R&D, innovation and human resource development should be viewed by all stakeholders as investments in our future.

4. Canada should capitalize on its existing national resources, sectoral strengths and potential.

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[1] *This includes the work of the Canadian Institute of Advanced Research, Canadian Manufacturers' Association, Canadian Chamber of Commerce, Canadian Advanced Technology Association, Economic Council of Canada, Science Council of Canada, National Advisory Board on Science and Technology, Ontario Premier's Council, National Conference on Technology and Innovation and 1989 and 1990 National Forums and other efforts of the Science and Technology Advisory Councils and other organizations across the country.*

5. Essential to Canada's future are both the creation and expansion of already existing manufacturing, resource-based and service sector enterprises capable of enhancing the range, quality and competitiveness of our tradeable goods and services. To be successful, we must build strong Canadian-based companies that conduct R&D and manufacturing here and market their products worldwide, consistent with the theme of sustainable development.

6. Government spending on R&D, innovation support and S&T infrastructure should be better focused on Canada's priority areas and on mobilizing private investment, without compromising its important role in supporting basic, mission-oriented research, social science research and regulatory processes.

7. The expansion of existing initiatives that have proven successful should take precedence over the creation of new ones, and steps should be taken to ensure that they operate within a stable and longer-term environment.

8. The Framework should recognize strengths and potential among regions in incremental expenditures, with a view to enhancing the competitiveness of industry in all parts of Canada.

9. Canada should continue to foster and improve its university-industry and college-industry research linkages.

10. Industry-led development of scientific, technical and human resources should be stimulated.

11. Enhancing our science and technology knowledge and skills should be seen as crucial to strengthening our base of manufacturing, resource-based and service sector enterprises; to this end, we should also seek to enhance our investment climate, market penetration and financing arrangements.

NATIONAL COMMITMENT

Goals and targets

The Council is convinced that this Framework will only be successful if all science and technology stakeholders demonstrate a meaningful commitment to its implementation. Accordingly, they must be committed to the following goals that set its course:

- increase private sector market-driven and applied R&D in Canada through individual leadership, partnerships, investment and other means;

- enhance the innovation, acquisition, transfer, diffusion and adoption of best-practice product and process technologies in the Canadian manufacturing, resource and service sectors in all parts of the country; and

- stimulate growth and create enterprises in Canada, particularly small and medium-sized businesses, using science, technology and innovation to produce and successfully market higher value-added goods and services nationally and internationally.

This Framework lays the groundwork for a set of measures that, together with other key initiatives, will allow industry, institutions and governments to strive for a level of scientific and technological competitiveness consistent with that of a 2.5 percent GERD:GDP (gross domestic expenditure on R&D: gross domestic product) ratio. There has been considerable discussion of the GERD:GDP ratio. It influences economic performance, is tracked worldwide, and is recognized as a key R&D index.

Canada, however, falls far short of its major competitors when GERD:GDP ratios are compared. Our shortfall lies largely in the performance of industrial R&D. As a nation, we need to place greater emphasis on adopting best-practice technologies. Provincial First Ministers and Territorial Government leaders have endorsed the target of achieving a 2.5 percent GERD:GDP ratio by the year 2000. The federal government recognizes the critical requirement for increased use of science and technology in Canada's international competitiveness effort, but does not subscribe to expenditure objectives or targets at this time.

Performance indicators

A range of indicators must be in place to assess the efforts and measure progress. The Council will monitor Canadian scientific and technological performance in relation to other leading nations. The GERD:GDP ratio is one of a number of input indicators that provide a view of the degree of investment in research and associated activity. Others include:

- o R&D expenditures (by funders and performers);
- o number of scientific, technological and engineering personnel (based on qualifications);
- o number of research scientists and engineers working in the field; and
- o technology adoption rates.

There are also output indicators that measure economic results of this activity. These include:

- o shares of high, medium and low technology exports;
- o trade balance for high, medium and low technology products;
- o GDP accounted for by the high, medium and low technology products; and
- o value-added in particular industry sectors.

The Council has concluded that short term efforts should focus on tracking both input and output indicators. As new information and experience emerge from the implementation process and other sources, these indicators may be refined, modified or expanded.

Consensus building

An essential component of success is continued consensus building using existing government mechanisms and organizations.

A review of the National Science and Technology Policy confirms that the Council is responsible for providing the appropriate intergovernmental collaborative framework for science and technology development in Canada. The Council's purpose is to provide a formal ongoing forum to monitor the implementation of the policy, which is aimed at bringing science and technology fully to bear on the economic, social, cultural and regional development of Canada by encouraging cooperation among governments and among the public, quasi-public and private sectors.

Government collaboration may take a variety of forms, including memoranda of understanding, joint or parallel initiatives, intergovernmental agreements or contracts. These would define the parameters for implementing specific elements and for funding arrangements. In this context, the important role of economic and regional development agreements in science and technology is underscored. Governments believe that such agreements can continue to provide a valuable mechanism for promoting intergovernmental collaboration.

Consensus building with other stakeholders may take the form of flexible cooperative agreements, contractual arrangements or other initiatives. These would establish specific ventures, strategic partnerships or, in some cases, parallel initiatives, and bring together governments, research institutions, and private sector and community organizations.

ELEMENTS

The Council has identified the following four fundamental themes for implementing the goals and underlying principles of this Framework.

- enhancing R&D;
- stimulating innovation, technology transfer, diffusion and adoption in industry;
- developing human resources; and
- promoting a science culture.

Each of these themes has its individual elements, as outlined below.

Enhancing R&D

1. Initiatives should be implemented to enhance the level and effectiveness of collaborative R&D and to increase strategic and enabling technology research. Based on experience with current initiatives, these measures should ensure an appropriate mix of market-driven, applied and basic research, and should include the following:

- **Creating or building upon existing Networks of Centres of Excellence or other collaborative initiatives in keeping with priorities and research strengths in support of industrial competitiveness. The initiatives should cover the spectrum from longer-term fundamental research to medium- or shorter-term industrially oriented priorities, and should emphasize the promotion and enhancement of regional R&D interests. To this end, all levels of government must integrate their efforts and forge international linkages to already existing programs.**
- **Encouraging more successful and extensive industry-led R&D (including pre-competitive research) through consortia building between industry and governments, and national and international partners.**
- **Encouraging and assisting government and non-government organizations to collaborate on R&D projects of common priority based on and consistent with industry's identification of its immediate technology and engineering needs, as well as its longer-term R&D and training agenda.**

2. Initiatives should be undertaken to improve industry infrastructure by identifying and carrying out directed research in areas that will lead to technology transfer, diffusion and leading-edge technology development in industry and institutions. Priorities (such as industrial, resource-based or environmental research) should be set by individual governments and a high level of effort should be expended to ensure the collaboration of other jurisdictions.

3. Governments should review their overall research effort in laboratories and institutes, with a view to identifying and improving future market opportunities, weaknesses, strengths and potential in R&D. They should establish priorities for meeting infrastructure needs through collaborative efforts and upgrading. These priorities should address:

- **renewing infrastructure in universities, national laboratories and research support agencies to attract and improve the training of young Canadians in S&T professions;**
- **meeting customer needs and expectations;**
- **identifying and adapting foreign technology developments for use in Canada; and**
- **playing a catalytic role in initiating industrial research and technology transfer.**

Research, development and innovation in the natural, engineering and social sciences are key to the realization of competitive products and services. To achieve strategic product niches in the global marketplace, we must place greater emphasis on research in such areas as technology management, innovative organizational structures, motivation and productivity.

The Council is encouraged that governments have introduced measures to improve the Canadian R&D infrastructure through initiatives to enhance longer-term applied research and networking. All stakeholders, particularly industry, still need to play a more active role if we are going to enhance collaboration and achieve results on a national and regional level.

Stimulating innovation, technology transfer, diffusion and adoption in industry

4. The following steps should be taken to strengthen and enhance the overall core innovation support effort.

- **Intensify coordination between government and private sector innovation and business development assistance to ensure that respective roles, mandates and fiscal capacity are more closely linked and that respective innovation support programs are complementary, regionally responsive and sensitive, non-competitive and non-duplicative.**

- **Make longer-term program and funding commitments to core innovation programs so that continuity is maintained in the scope and level of activities, and that the federal Industrial Research Assistance Program (IRAP) and innovation support programs of other governments are enhanced.**

- **Place greater emphasis on supporting multipartnered industrial programs in high priority areas and on market pull and commercial orientation when assessing projects for support. This emphasis should complement the existing technology-oriented review and assessment process.**

- **Review other non-tax innovation support measures to ensure the adequacy, effectiveness and complementary nature of existing instruments and to determine whether elements should be modified, streamlined, enhanced or created.**

Governments in Canada have or support a wide range of core programs, mechanisms, activities and funding arrangements that are the cornerstone of innovation support efforts in industry and research organizations. The Council feels that governments can support innovation further by ensuring that its more successful initiatives benefit from longer-term funding, a stronger commitment and increased stability. The merits and value of these initiatives, particularly IRAP, are widely understood and documented. A number of them, including IRAP, are also important instruments of technology transfer. The Council strongly encourages the introduction of a series of measures to strengthen and enhance the effectiveness of these core innovation programs among stakeholders.

5. Initiatives should be implemented to support an unsolicited R&D proposals program that reflects the intent and direction of this Statement.

These initiatives should be set up to allow enterprises to submit unsolicited proposals for scientific and technological services that would offer innovative solutions to problems within the science missions of governments and agencies. They should be structured to encourage localized decision making, partnerships and information sharing across jurisdictions.

6. All orders of government should ensure procurement practices support regional technology development and supplier initiatives.

Government procurement across Canada should encourage small and medium-sized businesses to use and develop advanced technology. The provinces and territories in particular have the largest stake and potential for action in this area. Emphasis should be placed on performance criteria, supplier development, first-user risk reduction, contract award, and ensuring that developed technologies can be used or transferred for exploitation.

7. Investment and taxation issues, studies and developments should continue to be examined to maximize the effectiveness of the S&T effort.

R&D tax incentives and related financing and investment matters are vital to stimulating R&D, industrial innovation and technology transfer. Although they fall outside of the direct responsibility of S&T ministers, the Council recognizes that the impact of recent investment and taxation reforms on R&D, innovation and technology transfer requires monitoring to ensure that pertinent public and private sector issues are addressed in an effective manner. Recommendations for stimulating R&D and innovation have raised such issues as:

- the requirement that grants and other forms of government assistance reduce the expenditure base for tax purposes;
- the definition of qualifying expenditures for existing federal tax credits;
- capping of existing tax credits;
- the availability and flow of pension and venture capital funds to technology-related investments;
- debt and equity financing to stimulate investment in technology development;
- the cost of capital for companies wishing to innovate;

- the application of sales tax to equipment purchased by industry for research institutions; and

- the commitment of Canadian-based companies to undertake R&D in Canada.

Measures to stimulate technology development have also been raised, including, among others:

- dedicated R&D tax applicable generally or to sectors;

- flow-through tax incentives; and

- tax-free financing instruments.

8. Initiatives should be implemented to encourage companies engaged in regional and national natural resource activities to undertake R&D and innovation, including product and process innovation.

Governments recognize the importance of encouraging R&D, innovation and a more rapid application of new technologies to Canada's traditional resource industries. We should seek to lower costs, improve efficiency and generate higher quality products and markets in new end-use areas.

9. Initiatives should be implemented to stimulate environmental R&D and the adoption of specific measures for pollution-reducing technologies.

The Council recognizes that a high priority should be placed on sustainable development in conjunction with the introduction of well tested, new pollution-reducing technologies. Companies should be encouraged to develop new processes and procedures to reduce pollution in their operations (such as energy efficient and pollution-free mineral processing technologies), new anti-pollution equipment, processes, procedures and systems for sale, and new systems and demonstration facilities for reducing municipal pollution (e.g. recycling, solid waste management, water purification, sewage treatment). Governments should adopt measures encouraging industry to develop and adopt environmentally safe and internationally competitive technologies and consider related proposals from provincial and territorial round tables on the economy and the environment.

10. Technical and engineering cooperative initiatives should be adopted, so that engineering and technical personnel can gain experience in assisting companies to initiate R&D and to acquire, transfer, diffuse and adopt technology.

Programs such as Ontario's "Technical Personnel Program" and Quebec's "Programs to Promote the Creation of Scientific Jobs" should be more widely used and promoted. These programs were established to supply engineering and technical employment support to companies, particularly those with little or no technological capability, for the purpose of initiating R&D activities and acquiring or improving technology transfer or adaptation. They fill a demand-side need by placing engineers and technologists in companies requesting the service. These programs also help to promote ongoing liaison and knowledge transfer among industry, universities, community colleges and high schools.

11. Initiatives should be implemented to enhance Canada's international collaboration on technology and knowledge transfer.

The Council recognizes the importance of increasing international partnerships and collaborative efforts to provide new opportunities for the acquisition and use of foreign technologies, to provide alliance and joint venture S&T opportunities, and to apply Canadian technologies and expertise abroad. The Council encourages the Canadian private sector, research institutions and governments to become more fully involved in such activities.

12. Initiatives should be developed and implemented to encourage more university-industry and college-industry linkages.

Effective university-industry and college-industry linkages already exist in many forms and in many parts of the country. The Council believes that in order to maximize science and technology knowledge, applications and opportunities, stakeholders should use these linkages more extensively. By so doing, community colleges and universities would be acting as more effective agents in technology transfer and management.

13. Governments recognize that although many companies may not have the capability to undertake R&D, the adoption of best-practice technology is essential to productivity improvement, cost reduction and increased quality. Individual stakeholders should develop initiatives to help industry, particularly small and medium-sized businesses, in acquiring and adapting to advanced technology.

14. Governments should develop networks that improve the dissemination of foreign and Canadian technology transfer and patent data, R&D intelligence, science and technology trends, and national standards.

Effective network development, implementation and use is expected to have a strong impact on future Canadian competitiveness. Emerging needs from industry, research organizations, technology centres, Networks of Centres of Excellence and government research and standards institutions must be responded to in order to ensure more effective information and technology transfer, and new product and process development. The Council recognizes the critical role that intellectual property can play in science and technology and that patent information must be made more available.

Developing human resources

15. The Council will communicate and liaise with other Councils and stakeholders active in education, training and human resource development, both in and outside of government, to enhance the overall effort and ensure consistency in human resource development plans and activities.

16. The Council will develop industry, S&T work force and education-related proposals for consideration by the Council of Ministers of Education, Canada, and the federal government. The Council will also identify human resource development initiatives that individual stakeholders can undertake alone or in partnership to meet both specific industry and more general needs related to S&T education.

The Council is concerned that too many people, particularly women, are lacking the knowledge and skills necessary to help Canada compete internationally, that not enough people are choosing careers in science and technology fields, and that insufficient priority is being placed on skill enhancement through workplace training. Canada's success in the changing global economy will, in significant measure, depend on a scientifically and technologically knowledgeable and skilled work force and on its ability to manage innovation and introduce new technologies. Governments, schools, community colleges, universities, business and labour must all be mobilized to improve S&T education and training at all levels.

Promoting a science culture

17. National Science and Technology Week was conceived to help Canadians understand the latest developments in science and technology, outline national S&T achievements and encourage more young people to choose careers in science, technology and engineering. It should be made into a major annual cooperative event, in which federal, provincial and territorial governments, the private sector, scientific and engineering societies, educational institutions, museums and science centres all play a more active role. This national event should also be complemented by provincial and territorial science and technology weeks.

18. Government commitment to funding science and technology awareness should be longer term, and a higher priority should be placed on initiatives to:

- develop public awareness and marketing strategies that will enhance public understanding of the need for a substantial national commitment to science and technology to provide the foundation for a strong future economy;

- promote collaboration with research institutes, with a view to encouraging Canadian industry to adopt new technologies, assume a more dynamic approach to technology transfer and science and technology development, and undertake its own S&T awareness programs;

- promote public awareness initiatives that encourage the work force and students to consider business opportunities and careers in science, engineering and technology;

- improve coverage of science and technology by the general media and specifically target editors, publishers and producers of radio and television programs who are responsible for how and what information is conveyed to the general public; and

- recognize outstanding teacher and counsellor contributions to science and technology at the elementary and secondary school levels by setting up projects and awards, and, together with industry, support and promote innovative teaching tools and enhance teaching skills.

To be competitive in the 21st century, it is imperative that Canada possess a strong human resource base in science and technology. Key to the formation of this base is enhanced public awareness of science and technology. We must change current perceptions of science and technology so that more young Canadians, particularly women, choose careers in science, technology and engineering fields. Research shows that today's young Canadians have negative attitudes about science and technology and that at age 12 they are already steering away from science and technology courses. Enrolment in S&T courses at the community college and university levels is low, and of those who graduate, few seek employment in science and technology fields. All stakeholders, particularly industry and labour, must address this very real concern.

Our commitment to increasing public awareness of the importance of science and technology to Canada's economic growth and quality of life must continue to be long term and on a national scale. All stakeholders are encouraged to consult with one another to ensure that they are working both independently and in cooperation in the most effective way.

LOOKING AHEAD

In its preparation of this Framework, the Council considered many proposals and views expressed by S&T stakeholders. This document is the first of its kind to address such a range of actions on science and technology issues affecting the nation. It conveys a key message: all stakeholders, including governments, must show a real commitment to working independently and in cooperation over the long term to meet their objectives. Together, stakeholders will both bear the costs and reap the benefits of helping Canada improve its international competitive position and its prosperity.

This Framework is meant to be a new point of departure for ongoing discussion and action. As such, it will complement other initiatives, both present and future, that will be realized outside its parameters. It is a series of discrete actions stakeholders can take while work on a more comprehensive framework unfolds.

As the first step of the National Science and Technology Action Plan, it is intended to provide direction for all stakeholders as they prepare to bring substance to bear on their conceptual ideas. Governments will develop work plans to give life to the elements of this Framework over time. Other stakeholders are strongly encouraged to do likewise and to consult and collaborate in this undertaking.

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en matière de sciences et de technologie

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et de la technologie

SASKATOON (Saskatchewan)
Le 9 mai 1991

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CADRE DE TRAVAIL NATIONAL

EN MATIERE DE SCIENCES ET DE TECHNOLOGIE

Conseil des ministres des Sciences et de la Technologie

Mai 1991

TABLE DES MATIÈRES

SOMMAIRE i

INTRODUCTION 1

PRINCIPES 2

ENGAGEMENT NATIONAL 4

ÉLÉMENTS 7

L'AVENIR 16

SOMMAIRE

Le présent cadre de travail est le premier document du genre portant sur une gamme de mesures concernant les questions de sciences et technologie (S-T) influant sur tout le pays. Il se veut un nouveau point de départ pour poursuivre les discussions et les efforts. Il a pour objet d'orienter la démarche de tous les intervenants et se veut le complément d'initiatives actuelles et futures. Il s'agit d'un cadre qui comprend une série de mesures que les intervenants peuvent prendre pendant que des démarches plus générales se poursuivent.

Le Conseil des ministres des sciences et de la technologie invite tous les intervenants à élaborer des plans de travail applicables aux éléments mentionnés dans le présent document à se consulter et à collaborer.

Le défi

Le Canada tout entier doit se montrer déterminé à élargir sa base de connaissances et de compétences en S-T s'il veut être en mesure de soutenir la concurrence sur les marchés internationaux du XXI[e] siècle. Le présent document préconise une participation plus active, un regroupement des intérêts ainsi qu'une collaboration plus étroite entre tous les intervenants, sans compromettre l'aide essentielle à la recherche fondamentale, à la recherche spécialisée et à la recherche en sciences sociales, ni le processus de réglementation. Il en décrit les buts et les principes pour ensuite définir les éléments qui devraient contribuer à la mise en oeuvre du plan.

Les buts

Voici les objectifs des éléments de mise en oeuvre recommandés par le Conseil:

- accroître la recherche commerciale et appliquée et le développement dans le secteur privé au Canada, grâce au leadership individuel, au partenariat, aux investissements et à d'autres moyens;

- intensifier l'innovation ainsi que l'acquisition, le transfert, la diffusion et l'adoption de technologies optimales en ce qui a trait aux produits et aux procédés dans les secteurs canadiens de la fabrication, de l'extraction et des services;

- stimuler la croissance et favoriser au Canada la création d'entreprises, notamment de petites et moyennes entreprises, qui utilisent les sciences, la technologie et l'innovation pour produire des biens et des services d'une plus grande valeur ajoutée et les commercialiser avec succès sur les marchés nationaux et internationaux.

Les éléments

En vue de l'accroissement de la R-D, le Conseil des ministres propose la mise en oeuvre d'initiatives pour :

1. accroître le niveau et l'efficacité de la R-D entreprise en collaboration et favoriser la recherche thématique de même que la recherche portant sur des technologies à avantage concurrentiel;

2. améliorer l'infrastructure industrielle;

3. cerner le potentiel commercial de même que les faiblesses, les points forts et les possibilités qui existent en R-D et combler les lacunes.

En vue de l'intensification de l'innovation et du transfert, de la diffusion et de l'adoption de la technologie dans les industries, le Conseil des ministres propose la mise en oeuvre d'initiatives pour :

4. accroître l'effort de base global déployé pour soutenir l'innovation;

5. appuyer un programme de propositions spontanées qui reflétera l'orientation future de la S-T;

6. veiller à ce que les pratiques d'achat favorisent le développement technologique dans les régions, et les initiatives des fournisseurs;

7. examiner les questions, les études et les progrès en matière d'investissements et de fiscalité pour maximiser l'efficacité de l'effort de S-T;

8. encourager les entreprises s'occupant de mise en valeur des ressources naturelles, à l'échelle régionale ou nationale, à s'engager dans la R-D et dans l'innovation, y compris l'innovation en matière de produits et de procédés;

9. stimuler la R-D environnementale et favoriser l'adoption de mesures précises à l'égard de technologies de réduction de la pollution;

10. encourager des ingénieurs et des techniciens à aider les entreprises à entreprendre de la R-D et à acquérir, transférer, adopter et diffuser de la technologie;

11. accroître la collaboration internationale du Canada en matière de transfert et de savoir technologiques;

12. promouvoir les liens entre universités et entreprises, et entre collèges et entreprises;

13. aider les industries, notamment les petites et moyennes entreprises, à acquérir et à adapter des technologies nouvelles;

14. améliorer la diffusion de données sur les brevets et les transferts technologiques canadiens et étrangers, et de renseignements sur la R-D, les tendances en sciences et en technologie, et les normes nationales.

En vue de la mise en valeur des ressources humaines, le Conseil des ministres prendra les dispositions voulues pour :

15. communiquer son point de vue sur les besoins en ressources humaines au Conseil des ministres de l'Éducation du Canada et à d'autres intervenants afin qu'il en soit tenu compte;

16. formuler à l'intention du CMEC et du gouvernement fédéral des recommandations relatives à l'emploi et à la formation en S-T et définir des mesures précises de mise en valeur des ressources humaines que les intervenants pourraient mettre en oeuvre, à titre individuel ou en collaboration.

En vue de la promotion d'une culture scientifique, le Conseil des ministres propose la mise en oeuvre d'initiatives pour :

17. faire en sorte que la Semaine nationale des sciences et de la technologie devienne une grande manifestation conjointe dans l'organisation de laquelle, chaque année, le gouvernement fédéral, les gouvernements provinciaux et territoriaux et d'autres intervenants joueraient un rôle plus grand;

18. dresser des stratégies de sensibilisation et de marketing afin d'inciter les professionnels et les étudiants à envisager des possibilités d'affaires et de carrière en sciences, en technologie ou en génie, améliorer la place faite aux sciences et à la technologie dans les médias et reconnaître la contribution d'enseignants et de conseillers exceptionnels.

INTRODUCTION

Face au phénomène croissant de la mondialisation, le Canada doit relever des défis de taille en matière de concurrence au cours de la présente décennie, notamment ceux d'ordre technologique. Le pays devra donc améliorer sa base de connaissances, son bassin de compétences et sa culture scientifiques et technologiques pour être en mesure de produire des biens et des services concurrentiels sur les marchés internationaux et d'augmenter le revenu réel des Canadiens.

Le cadre de travail préparé par le Conseil des ministres des sciences et de la technologie vise à fournir une orientation propre à répondre aux impératifs canadiens en matière de S-T. Il s'agit du premier énoncé canadien d'un plan d'action à long terme pour les sciences et la technologie au Canada. Pour la première fois, le gouvernement fédéral et les gouvernements des provinces et des territoires ont établi non seulement des principes et des objectifs, mais également des mesures dont la mise en oeuvre sera assurée par les intervenants, selon leur choix et leurs moyens. Cet énoncé est le premier résultat d'un processus permanent qui donnera un sens aux buts que nous nous sommes fixés.

Le Canada tout entier doit s'engager dans cette entreprise. Pour que le plan ait une portée nationale, il faudra que tous les intervenants dans le domaine de la S-T, c'est-à-dire les milieux d'affaires, les syndicats, tous les ordres de gouvernement, les universités et les collèges, les établissements de recherche et les associations, ainsi que les particuliers, individuellement ou collectivement, fassent preuve de leadership et y participent.

PRINCIPES

Le Conseil des ministres est parti des deux prémisses suivantes. Premièrement, le cadre de travail a sa source dans la politique nationale des sciences et de la technologie. Il s'agit donc d'une initiative que les intervenants appuient et entendent mettre en oeuvre. Deuxièmement, le plan se veut le complément de l'ensemble de connaissances, de conseils et de propositions mis de l'avant ces dernières années par de nombreux organismes et associations représentant divers secteurs du monde de l'industrie et de la recherche.[1] Les travaux entrepris par ces groupes ont créé un climat fort propice et demeurent des outils précieux pour débattre des dossiers scientifiques et technologiques et proposer des moyens d'action.

Pour être efficace, le cadre de travail doit reposer sur des principes reconnus. Le Conseil des ministres a par conséquent adopté les principes suivants pour orienter sa démarche :

1. Un engagement et un partenariat d'envergure nationale sont une condition essentielle à la pleine réalisation du cadre de travail.

2. L'amélioration de la capacité et du rendement du pays en matière de R-D, d'innovation et d'adoption de technologies ne saurait être possible sans l'appui indéfectible et les investissements du secteur industriel, ainsi que des politiques des gouvernements.

3. La R-D, l'innovation et la mise en valeur des ressources humaines doivent être considérées par tous les intervenants comme des investissements pour l'avenir.

4. Le Canada doit tirer parti de ses ressources naturelles, de ses secteurs forts et de son potentiel.

5. L'avenir du pays repose sur la création d'entreprises de fabrication, d'extraction et de services capables d'accroître la diversité, la qualité et la compétitivité de nos produits et services commercialisables ainsi que sur l'expansion de celles qui existent déjà. Il faut donc mettre sur pied des entreprises solides, établies

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[1] *Y compris les travaux de l'Institut canadien des recherches avancées, de l'Association des manufacturiers canadiens, de la Chambre de commerce du Canada, de l'Association canadienne de technologie de pointe, du Conseil économique du Canada, du Conseil des sciences du Canada, du Conseil consultatif national des sciences et de la technologie, du Conseil du Premier ministre de l'Ontario, de la Conférence nationale sur la technologie et l'innovation et des Forums nationaux de 1989 et 1990, ainsi que d'autres efforts des conseils consultatifs des sciences et de la technologie et d'autres organismes de partout au pays.*

au Canada, qui effectueront leur R-D et la fabrication ici-même et qui offriront leurs produits partout dans le monde, dans une optique de développement durable.

6. Les dépenses publiques relatives à la R-D, à l'innovation et aux infrastructures scientifique et technologique doivent être davantage axées sur les secteurs prioritaires du Canada et sur la mobilisation d'investissements de sources privées. Ces dépenses ne doivent pas compromettre ni le rôle de premier plan que joue le gouvernement en ce qui concerne l'aide à la recherche fondamentale, à la recherche spécialisée et à la recherche en sciences sociales, ni le processus de réglementation.

7. L'expansion d'activités existantes ayant fait leurs preuves doit avoir la priorité sur toute initiative de création, et des mesures doivent être prises pour favoriser l'instauration d'un climat stable et durable.

8. Le cadre de travail doit tenir compte des forces et du potentiel des régions du pays lorsqu'il s'agit d'accroître les dépenses afin de rehausser la compétitivité des industries partout au Canada.

9. Le Canada doit continuer de promouvoir et d'améliorer les liens entre, d'une part, les universités et les collèges, et, d'autre part, les milieux industriels.

10. Les industries doivent/devraient encourager la formation de personnel scientifique, technique et spécialisé.

11. L'élargissement des connaissances et des compétences en matière de S-T doit être considéré comme un facteur essentiel au renforcement de la base d'entreprises de fabrication, d'extraction et de services du pays; à cette fin, il faut chercher à améliorer le climat d'investissement, la pénétration des marchés et les modalités de financement.

ENGAGEMENT NATIONAL

Buts et objectifs

Le Conseil des ministres croit que le cadre de travail ne sera couronné de succès que si les intervenants en matière de S-T s'engagent véritablement à le mettre en oeuvre. Par conséquent, ils doivent s'engager à chercher à atteindre les buts suivants :

- accroître la recherche commerciale et appliquée et le développement dans le secteur privé au Canada, grâce au leadership individuel, au partenariat, aux investissements et à d'autres moyens;

- intensifier l'innovation ainsi que l'acquisition, le transfert, la diffusion et l'adoption de technologies optimales en ce qui a trait aux produits et aux procédés dans les secteurs canadiens de la fabrication, de l'extraction et des services de toutes les régions du pays;

- stimuler la croissance et favoriser la création d'entreprises au Canada, notamment de petites et moyennes entreprises, qui utilisent les sciences, la technologie et l'innovation pour produire des biens et des services d'une plus grande valeur ajoutée et les commercialiser avec succès sur les marchés nationaux et internationaux.

Le présent cadre de travail ouvre la voie à une série de mesures qui, de concert avec d'autres initiatives clés, permettront aux industries, aux établissements et aux gouvernements de viser un degré de compétitivité scientifique et technologique correspondant à un rapport DBRD/PIB (dépenses intérieures brutes en R-D: produit intérieur brut) de 2,5 p. 100 d'ici l'an 2000. Le rapport DBRD/PIB influe sur la performance économique et est considéré comme un indice clé en R-D. Son évolution est suivie partout dans le monde.

Or, le Canada vient bien loin derrière ses concurrents au niveau des rapports DBRD/PIB. Ce retard se situe dans une large mesure dans la R-D industrielle. Le pays doit mettre l'accent sur l'adoption de technologies optimales. Les premiers ministres provinciaux et les chefs des gouvernements territoriaux ont donné leur accord à l'objectif qui consiste à atteindre un rapport DBRD/PIB de 2,5 p. 100 d'ici l'an 2000. Le gouvernement fédéral reconnaît le rôle crucial que doivent jouer de plus en plus les sciences et la technologie dans la compétitivité internationale du Canada. Par contre, le gouvernement fédéral ne souscrit pas pour le moment aux objectifs de dépense.

Indices de rendement

Il faut pouvoir compter sur une série d'indices pour évaluer les efforts et mesurer les progrès accomplis. Le Conseil des ministres évaluera la performance scientifique et technologique du Canada par rapport à celle d'autres pays principaux. Le rapport DBRD/PIB n'est qu'un des indices d'intrants qui peuvent donner un aperçu de l'importance des investissements consacrés à l'activité visée. En voici d'autres :

- dépenses en R-D (bailleurs de fonds et exécutants);
- nombre de scientifiques, de technologues et d'ingénieurs (selon leurs compétences);
- nombre de scientifiques et d'ingénieurs-chercheurs travaillant dans le domaine;
- rythme d'adoption de la technologie.

Il y a aussi les indices d'extrants qui mesurent les résultats économiques de cette activité, notamment :

- part d'exportations à haute, moyenne et faible intensité technologique;
- balance commerciale pour les produits à haute, moyenne et faible intensité technologique;
- part du PIB représentée par les produits à haute, moyenne et faible intensité technologique;
- valeur ajoutée dans certains secteurs industriels.

A court terme, le Conseil des ministres a conclu qu'il y aurait lieu d'utiliser les indices à la fois d'intrants et d'extrants. Ces indices pourront être améliorés ou modifiés au fur et à mesure que la mise en oeuvre permettra de recueillir des renseignements et d'acquérir de l'expérience.

Regroupement d'opinions

L'existence d'un mécanisme permanent de regroupement d'opinions faisant appel aux services actuels des gouvernements et des organismes est essentielle au succès du plan d'action.

L'examen de la politique nationale en matière de S-T confirme que c'est au Conseil des ministres qu'il revient de servir de cadre à la coopération intergouvernementale pour le développement scientifique et technologique au Canada. Le Conseil des ministres se veut le carrefour officiel permanent où l'on surveille l'application de la politique, laquelle a pour but d'amener la S-T à occuper toute la place qui lui revient dans le processus de développement économique, social, culturel et régional au Canada, et à favoriser la collaboration entre les gouvernements et entre les secteurs public, parapublic et privé.

La collaboration entre les gouvernements peut prendre diverses formes, y compris des protocoles d'entente, des initiatives parallèles, des ententes intergouvernementales ou des contrats. Ces ententes définiraient les paramètres qui entoureront la mise en oeuvre d'éléments précis du plan et les arrangements financiers. A cet égard, il convient de souligner le rôle important que les ententes de développement économique et régional ont joué dans le domaine de la S-T. Les gouvernements croient que ces ententes peuvent continuer à promouvoir la collaboration intergouvernementale.

Le regroupement d'opinions peut prendre la forme d'ententes de coopération souples, d'arrangements contractuels ou d'autres initiatives. Il se concrétisera dans des entreprises précises, des actions communes ou, dans certains cas, des initiatives parallèles auxquelles participeront les gouvernements, les centres de recherche, le secteur privé et les organismes communautaires.

ÉLÉMENTS

Le Conseil des ministres a défini les quatre thèmes fondamentaux suivants aux fins de la mise en oeuvre des objectifs du cadre de travail et des principes sur lesquels il repose :

- accroissement de la R-D;
- intensification de l'innovation, ainsi que le transfert, diffusion et adoption de la technologie dans les industries;
- mise en valeur des ressources humaines;
- promotion d'une culture scientifique.

Chacun de ces thèmes comporte des éléments, lesquels sont décrits ci-dessous.

Accroissement de la R-D

1. Prendre des mesures pour accroître le niveau et l'efficacité de la R-D en collaboration et favoriser la recherche thématique de même que la recherche portant sur des technologies à avantage concurrentiel. Ces mesures devraient assurer une combinaison appropriée de recherche commerciale, appliquée et fondamentale. Elles sont les suivantes :

- **Créer des réseaux de centres d'excellence ou élargir ceux qui existent, et prendre de nouvelles initiatives de coopération compte tenu des priorités et des forces en matière de recherche, dans une optique de compétitivité industrielle. Les initiatives engloberont toute une gamme d'activités allant de la recherche pure à long terme aux projets à moyen et à court terme à vocation industrielle, et elles mettront au premier plan la promotion des intérêts régionaux en matière de R-D. A cette fin, tous les ordres de gouvernement doivent unir leurs efforts et établir des liens de portée internationale.**
- **Favoriser la multiplication et la réussite des travaux de R-D (y compris la R-D préconcurrentielle) dans le secteur privé grâce à la formation de consortiums entre l'industrie et les gouvernements, et des partenaires nationaux et internationaux.**
- **Encourager et favoriser la collaboration d'organismes gouvernementaux et non gouvernementaux à des travaux de R-D de priorité commune, en accord avec les besoins en technologie et en génie exprimés par chacune des industries et avec la stratégie à long terme de R-D et de formation arrêtée par celles-ci.**

2. Prendre des mesures pour améliorer l'infrastructure industrielle en déterminant et en menant des recherches sectorielles dirigées qui aboutiront au transfert et à la diffusion de la technologie et à l'élaboration de technologies de pointe dans les milieux industriels et institutionnels. Les priorités (recherche liée aux industries, aux ressources ou à l'environnement, par exemple) seront établies par les divers gouvernements qui s'attacheront à conjuguer leurs efforts.

3. Examiner les efforts globaux de recherche des gouvernements dans les laboratoires et les centres dans l'intention de cerner le potentiel commercial de même que les faiblesses, les points forts et les possibilités qui existent en R-D et de combler les lacunes. A cette fin, les gouvernements établiront l'ordre de priorité des besoins en matière d'infrastructure qui pourraient être comblés par le biais d'initiatives et d'améliorations communes. L'essentiel sera de :

- renouveler l'infrastructure dans les universités, les laboratoires nationaux et les organismes de soutien à la recherche pour inciter les jeunes Canadiens à s'intéresser à la S-T et mieux les former;

- répondre aux besoins et aux attentes des clients;

- cerner les progrès technologiques à l'étranger aux fins de leur adaptation au Canada;

- jouer un rôle de catalyseur de la recherche industrielle et du transfert technologique.

La R-D et l'innovation dans le domaine des sciences naturelles, du génie et des sciences sociales sont essentiels à la mise sur le marché de produits et services concurrentiels. Pour trouver des créneaux sur le marché mondial, le Canada doit faire une plus large place à la recherche dans des domaines comme la gestion de la technologie, les structures organisationnelles innovatrices, la motivation et la productivité.

Le Conseil des ministres est heureux que les gouvernements aient pris des mesures pour améliorer l'infrastructure de la R-D au Canada grâce à l'accroissement de la recherche appliquée à long terme et à la création de réseaux. Néanmoins, tous les intervenants, notamment les industries, devront jouer un rôle plus grand pour accentuer la collaboration et obtenir des résultats nécessaires à l'échelle nationale et régionale.

Intensification de l'innovation et du transfert, de la diffusion et de l'adoption de la technologie dans les industries

4. Prendre les mesures suivantes afin d'accroître l'effort de base global déployé pour soutenir l'innovation :

- **Faire en sorte que l'aide fournie aux fins de l'innovation et du développement des entreprises par le gouvernement et le secteur privé soit mieux coordonnée afin qu'il y ait davantage interdépendance des rôles, des mandats et des moyens financiers de chacun et que les programmes de chacun pour le soutien à l'innovation se complètent, soient sensibles et adaptés aux besoins régionaux, n'entrent pas en concurrence et ne fassent pas double emploi.**

- **S'engager à long terme en matière de programmes et de financement vis-à-vis des programmes d'innovation afin de garantir que la portée et le niveau de l'activité demeurent constants, et que le Programme fédéral d'aide à la recherche industrielle (PARI) et les programmes d'aide à l'innovation mis en vigueur par d'autres gouvernements soient améliorés.**

- **Mettre davantage l'accent sur les programmes auxquels participent de nombreux partenaires dans des secteurs hautement prioritaires, ainsi que sur les forces d'attraction du marché et les orientations commerciales, sans oublier l'aspect technologique dans laquelle s'effectuent à l'heure actuelle de l'examen et de l'évaluation des projets.**

- **Examiner d'autres mesures non fiscales de soutien à l'innovation pour s'assurer de l'à-propos, de l'efficacité et de la complémentarité des éléments en place et déterminer les modifications, les rationalisations, les améliorations ou les ajouts qui s'imposent.**

Les gouvernements au Canada offrent une vaste gamme de programmes, de mécanismes, d'activités et d'arrangements financiers de base, ou leur fournissent un appui. Ceux-ci constituent la pierre angulaire des efforts déployés pour soutenir l'innovation dans les industries et dans les établissements de recherche. Le Conseil des ministres estime que les gouvernements peuvent apporter un meilleur soutien à l'innovation en veillant à ce que les initiatives les plus fructueuses soient assurées d'un financement à plus long terme, d'une aide soutenue et d'une stabilité accrue. La valeur et les mérites de ces initiatives, particulièrement le PARI, sont bien connus et bien documentés. Un certain nombre d'entre elles, dont le PARI, sont également d'importants moyens de transfert de la technologie. Le Conseil des ministres préconise fortement l'introduction d'une série de mesures pour renforcer ces programmes de base axés sur l'innovation et en accroître l'efficacité chez les intervenants.

5. Mettre en oeuvre une série d'initiatives à l'appui d'un programme de propositions de R-D spontanées qui reflétera l'esprit et l'orientation du présent plan d'action.

Ces initiatives devront permettre aux entreprises de présenter des propositions spontanées en vue de la prestation de services scientifiques et technologiques offrant des solutions innovatrices aux problèmes vécus dans le cadre des missions scientifiques des gouvernements ou organismes. Elles seront structurées de manière à encourager la prise de décisions à l'échelle locale, les partenariats et l'échange d'information entre les gouvernements.

6. S'assurer que les pratiques d'achat de tous les ordres de gouvernement favorisent le développement technologique dans les régions et les initiatives des fournisseurs.

Les achats gouvernementaux, dans tout le pays, devront encourager les petites et moyennes entreprises à utiliser et à concevoir de la technologie de pointe. Ce sont les provinces et les territoires qui ont le plus d'intérêts et les plus grandes possibilités d'action dans ce domaine. Il y aura lieu de mettre l'accent sur les critères de rendement, le recrutement de fournisseurs, la réduction des risques au premier usage et l'octroi de contrats. Il faudra aussi faire en sorte que les technologies conçues puissent être utilisées ou transférées aux fins d'exploitation.

7. Continuer d'examiner les questions, les études et les progrès en matière d'investissements et de fiscalité pour maximiser l'efficacité de l'effort de S-T.

Les stimulants fiscaux à la R-D et les questions de financement et d'investissement afférentes sont des éléments vitaux susceptibles de stimuler la R-D, l'innovation industrielle et le transfert technologique. Même si elles ne relèvent pas des ministres chargés de la S-T, le Conseil des ministres reconnaît que les réformes récentes en matière d'investissements et de fiscalité au chapitre de la R-D, de l'innovation et du transfert technologique ont une incidence qu'il faudra examiner de près. Ainsi, les questions pertinentes qui se posent dans les secteurs privé et public pourront être réglées efficacement. Au nombre des questions soulevées par les recommandations destinées à accroître les stimulants à la R-D et à l'innovation, mentionnons :

- la réduction de la base des dépenses aux fins d'imposition au moyen de subventions, de contributions et d'autres formes d'aide gouvernementale;

- la définition des dépenses admissibles à l'égard des crédits d'impôt fédéral existants;

- le plafonnement des crédits d'impôt existants;
- la disponibilité et l'utilisation des fonds de pension et des capitaux de risque pour des investissements technologiques;
- le financement par emprunts ou par capital-actions pour stimuler les investissements dans la mise au point de technologies;
- le coût des capitaux pour les entreprises désireuses d'innover;
- l'application de la taxe de vente dans le cas de l'équipement acheté par des industries pour des établissements de recherche;
- l'engagement, de la part de sociétés établies au Canada, d'y effectuer de la R-D.

Des mesures visant à encourager les progrès technologiques ont été proposées, dont :

- un impôt spécialement affecté à la R-D, d'application générale ou sectorielle;
- des incitations fiscales accréditives;
- des outils de financement nets d'impôt.

8. Mettre en oeuvre des mesures destinées à encourager les entreprises s'occupant de mise en valeur des ressources naturelles, à l'échelle régionale ou nationale, à s'engager dans la R-D et dans l'innovation, dont celle de produits et de procédés.

Les gouvernements reconnaissent qu'il importe d'encourager la R-D, l'innovation et l'application plus rapide des technologies nouvelles dans les industries traditionnellement axées sur les ressources au Canada. Il faudra chercher à réduire les coûts, à accroître l'efficacité, à augmenter la qualité des produits et à trouver des débouchés dans de nouveaux secteurs d'utilisation finale.

9. Mettre en oeuvre des projets visant à stimuler la R-D environnementale et à favoriser l'adoption de mesures précises à l'égard de technologies de réduction de la pollution.

Le Conseil des ministres reconnaît qu'il faut considérer comme hautement prioritaires le développement viable et la mise en place de technologies éprouvées et nouvelles de réduction de la pollution. Les entreprises doivent être encouragées à mettre au point des méthodes et des procédés pour réduire la pollution créée par leur fonctionnement (dont des technologies de transformation des minéraux éconergétiques et non polluantes), à commercialiser du matériel, des procédés, des méthodes et des systèmes nouveaux de lutte contre la pollution et à établir des systèmes et des installations témoins pour réduire la pollution à l'échelle municipale (p. ex., recyclage, gestion des déchets solides, purification de l'eau et traitement des eaux usées). Les gouvernements devraient prendre des mesures incitant l'industrie à mettre au point et à adopter des technologies compétitives à l'échelle internationale n'entraînant aucun danger pour l'environnement ainsi qu'à tenir compte des propositions en la matière issues des tables rondes provinciales et territoriales sur l'économie et l'environnement.

10. Adopter des mesures de coopération technique afin que des ingénieurs et des techniciens reçoivent la formation voulue pour aider les entreprises à entreprendre de la R-D et à acquérir, transférer, diffuser et adopter la technologie.

Il faudrait utiliser et promouvoir à plus grande échelle des programmes tels que le programme ontarien de personnel technique et le programme québécois de soutien à l'emploi scientifique. Ceux-ci ont été établis pour qu'une aide à l'emploi d'ingénieurs et de techniciens soit accordée aux entreprises, particulièrement celles qui n'ont que peu ou pas de moyens technologiques, de manière à ce qu'elles puissent entreprendre des travaux de R-D, acquérir de la technologie ou améliorer le transfert ou l'adaptation technologique. Ces programmes répondent aux besoins "sur demande", car des ingénieurs et des technologues sont placés auprès d'entreprises ayant réclamé ce service. En outre, ils favorisent les liens et connaissances entre les industries, les universités, les collèges communautaires et les écoles secondaires.

11. Mettre en oeuvre des mesures qui visent à accroître la collaboration internationale du Canada en matière de transfert et de connaissances technologiques.

Le Conseil des ministres reconnaît que les partenariats internationaux et les efforts de collaboration sont essentiels pour obtenir et utiliser des technologies étrangères, pour conclure des associations dans le domaine de la S-T et pour offrir la compétence et les technologies canadiennes aux marchés internationaux. Le Conseil des ministres encourage le secteur privé, les établissements de recherche et le gouvernements du Canada à s'intéresser de plus près à de pareilles activités.

12. Élaborer et mettre en oeuvre des mesures visant à promouvoir les liens entre universités et entreprises, et entre collèges et entreprises.

Il existe déjà dans de nombreuses régions du pays diverses formes de liens entre les universités et les entreprises, et entre les collèges et les entreprises. Le Conseil des ministres estime toutefois qu'il y aurait lieu de resserrer ces liens de manière à accroître les connaissances et à en élargir le champ d'application. Ce faisant, les collèges communautaires et les universités deviendraient de véritables agents du transfert technologique et de la gestion de la technologie.

13. Mettre en oeuvre des mesures précises pour aider les industries, notamment les petites et moyennes entreprises, à acquérir et à adapter des technologies nouvelles.

Les gouvernements reconnaissent que même si de nombreuses sociétés peuvent ne pas être en mesure d'entreprendre de la R-D, l'adoption de la technologie optimale est essentielle à l'amélioration de la productivité, à la réduction des coûts et au rehaussement de la qualité.

14. Mettre en place des réseaux afin d'améliorer la diffusion de données sur les brevets et les transferts technologiques canadiens et étrangers, et de renseignements sur la R-D, les tendances en S-T, et les normes nationales.

L'élaboration, la mise en place et l'utilisation d'un réseau efficace par les gouvernements devraient avoir un effet marqué sur la compétitivité future du Canada. Il faudra répondre aux besoins croissants des industries, des organismes de recherche, des centres de technologie, des réseaux de centres d'excellence et des établissements gouvernementaux de recherche et de normalisation, de manière à assurer la diffusion plus efficace de l'information et de la technologie, et la conception de produits et de procédés nouveaux. Le Conseil des ministres reconnaît également que la propriété intellectuelle peut jouer un rôle capital dans le domaine de la S-T et que l'information sur les brevets devrait être plus accessible.

Mise en valeur des ressources humaines

15. Communiquer et rester en liaison avec d'autres conseils et intervenants oeuvrant dans les domaines de l'enseignement, de la formation et du perfectionnement des ressources humaines, tant à l'intérieur qu'à l'extérieur du gouvernement, pour améliorer l'effort général et veiller à ce que les plans et les activités en matière de mise en valeur des ressources humaines soient cohérents.

16. Soumettre à l'examen du Conseil des Ministres de l'Éducation (Canada) et du gouvernement fédéral des recommandations relatives à l'emploi et à la formation en S-T. En outre, le Conseil des ministres définira des mesures précises de mise en valeur des ressources humaines, que les intervenants pourraient mettre en oeuvre, seuls ou en collaboration, pour répondre à des besoins précis des industries ou à des besoins plus généraux concernant l'éducation en S-T.

Le Conseil des ministres s'inquiète de ce que trop de gens, notamment les femmes, n'ont pas les connaissances et les compétences voulues pour aider le Canada à être compétitif sur les marchés internationaux. Ils se préoccupent aussi du faible nombre de personnes qui choisissent de faire carrière dans les domaines scientifiques et technologiques et du fait que la priorité accordée au perfectionnement par le biais de la formation en milieu de travail soit insuffisante. Le succès que connaîtra le Canada face à l'évolution de l'économie mondiale dépendra dans une mesure appréciable d'une main-d'oeuvre hautement qualifiée en S-T et de sa capacité de gérer l'innovation et de mettre en place de nouvelles technologies. Les gouvernements, les écoles, les collèges communautaires, les universités, les milieux d'affaires et les syndicats doivent oeuvrer ensemble à l'amélioration des systèmes d'éducation et de formation en S-T à tous les niveaux.

Promotion d'une culture scientifique

17. La Semaine nationale des sciences et de la technologie a été conçue de manière à aider les Canadiens à comprendre les plus récents progrès scientifiques, à souligner les réalisations en S-T au pays, et à inciter un plus grand nombre de jeunes à envisager une carrière dans les sciences, la technologie et le génie. Cette semaine devrait devenir une grande manifestation, chaque année, à laquelle contribueraient le gouvernement fédéral, les gouvernements provinciaux et territoriaux, le secteur privé, les sociétés de sciences et de génie, les établissements d'enseignement, les musées et les centres scientifiques. Pourraient venir se greffer à cette manifestation nationale, des semaines des sciences et de la technologie à l'échelle provinciale et territoriale.

18. S'engager à long terme à financer une campagne nationale de sensibilisation aux sciences et à la technologie. Pour ce faire, le gouvernement accordera la priorité aux initiatives ayant pour but :

- **d'établir des stratégies de sensibilisation et de marketing qui permettront au grand public de mieux comprendre la nécessité d'un engagement national important à l'égard de la S-T pour fournir la base en vue d'un avenir économique prospère;**

- **de favoriser la collaboration avec des établissements de recherche, en vue d'inciter les industries canadiennes à adopter des technologies nouvelles, à jouer un rôle plus dynamique dans le transfert technologique et le développement de la S-T et à lancer leurs propres programmes de sensibilisation à la S-T;**

- **d'inciter la population active actuelle et future à envisager des possibilités de carrière et d'affaires en sciences, en génie et en technologie;**

- **d'améliorer l'image donnée à la S-T par les grands médias, et plus précisément par les rédacteurs et les éditeurs des journaux et par les producteurs d'émissions de radio et de télévision qui sont responsables dans les faits du ton et du contenu de l'information communiquée au public en général;**

- **de reconnaître la contribution exceptionnelle de certains enseignants et conseillers à l'avancement de la S-T dans les écoles primaires et secondaires en instituant des projets et des récompenses et, de concert avec l'industrie, d'encourager et de promouvoir l'usage d'outils didactiques innovateurs, et d'améliorer les techniques d'enseignement.**

Pour être en mesure de relever le défi concurrentiel du XXi[e] siècle, le Canada devra disposer d'une solide base de ressources humaines en S-T. Or, celui-ci n'arrivera à la constituer que si la population est suffisamment consciente de l'importance de la S-T. Le pays devra modifier la perception qui existe actuellement de la S-T afin qu'un plus grand nombre de jeunes Canadiens, de jeunes femmes notamment, puissent choisir de faire carrière en sciences, en technologie ou en génie. Des recherches révèlent que les jeunes Canadiens ont une attitude négative face à la S-T, et qu'ils commencent à s'éloigner des cours en la matière dès l'âge de 12 ans. Les inscriptions en S-T sont peu nombreuses dans les collèges et les universités, et peu de diplômés cherchent par la suite un emploi dans leur domaine. Tous les intervenants, surtout les industries et les syndicats, doivent se préoccuper de cette très grave question.

Un effort national de sensibilisation de la population à la S-T, et à son importance pour la croissance économique et pour la qualité de la vie au Canada est essentiel à long terme. Tous les intervenants sont invités à se consulter pour s'assurer qu'ils travaillent individuellement et ensemble le plus efficacement possible.

L'AVENIR

Aux fins de la rédaction du présent document, le Conseil des ministres a étudié bon nombre de propositions et de vues qui lui ont été soumises par tous les intervenants en S-T. Il s'agit du premier document du genre portant sur toute une gamme de mesures concernant les questions de S-T influant sur tout le pays. Il annonce un message important : tous les intervenants, le gouvernement y compris, devront s'engager à travailler individuellement et collectivement à long terme à la réalisation des objectifs qui y sont définis. Les partenaires se partageront les coûts, certes, mais aussi les avantages puisqu'ils auront aidé le Canada à accroître sa compétitivité sur les marchés internationaux et à devenir plus prospère.

Ce cadre de travail se veut un nouveau point de départ pour poursuivre les discussions et les efforts. A ce titre, il se veut aussi le complément d'autres initiatives, actuelles et futures, qui seront mises en oeuvre dans un cadre distinct. C'est par ailleurs une série de mesures précises que les intervenants peuvent prendre pendant que le travail en vue d'un cadre général se poursuit.

Première étape du plan d'action national pour la S-T, le présent cadre de travail servira à orienter la démarche de tous les intervenants qui devront chercher à donner un sens aux éléments qu'il renferme. Les gouvernements élaboreront des plans de travail pour que puissent être mis en oeuvre les éléments du cadre de travail. Les autres intervenants sont fortement encouragés à en faire de même à se consulter et à collaborer à cette entreprise.

DOCUMENT: 830-393/008

FEDERAL-PROVINCIAL-TERRITORIAL MEETING OF THE COUNCIL OF SCIENCE AND TECHNOLOGY MINISTERS

Press Communiqué

National Science and Technology Action Plan Released

Council of Science and Technology Ministers Secretariat

SASKATOON, Saskatchewan
May 9, 1991

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NATIONAL SCIENCE AND TECHNOLOGY FRAMEWORK FOR ACTION RELEASED

SASKATOON, Saskatchewan, May 9, 1991 — The Council of Science and Technology Ministers met today to discuss a number of issues, including a National Science and Technology Framework for Action. The Framework, which calls for more active involvement by, and collaboration between, governments, business, labour, universities and research institutes, was released.

All governments attending endorse the Framework except Ontario, which expressed reservations about the release of the document in its present form.

Implementation of the Framework will concentrate on four broad areas — enhancing research and development; stimulating innovation and technology transfer; developing human resources; and, promoting a science culture. The plan contains 18 specific elements to help Canada improve its international competitive position and its prosperity over the decade.

The Framework began as a consultation document in 1990 and has been revised to reflect the input received through consultations by each of the participating governments. Ministers today thanked stakeholders from all sectors who provided advice during these consultations which helped to shape the Framework.

The Council reviewed implementation plans and decided on the first series of initiatives participating governments could address collaboratively. Ministers are looking to create opportunities for cooperation and mechanisms for increased efficiency in allocating available resources to investments in science and technology. Continuing discussions with stakeholders are planned, to obtain views on specific elements of the plan and to track progress on implementation.

The Council, which consists of federal, provincial and territorial ministers responsible for science and technology, was established in 1987 to monitor the implementation of the National Science and Technology Policy. Today's meeting was co-chaired by federal Science Minister William Winegard and Saskatchewan Economic Diversification and Trade Minister Grant Schmidt. The Council's next meeting is scheduled for the fall of 1991.

- 30 -

DOCUMENT: 830-393/008

RÉUNION FÉDÉRALE-PROVINCIALE-TERRITORIALE DU CONSEIL DES MINISTRES DES SCIENCES ET DE LA TECHNOLOGIE

Communiqué de presse

Parution du plan d'action national pour les sciences et la technologie

Secrétariat du Conseil des ministres des sciences
et de la technologie

SASKATOON (Saskatchewan)
Le 9 mai 1991

VEUILLEZ NOTER

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PARUTION D'UN DOCUMENT SUR LE CADRE DE TRAVAIL NATIONAL POUR LES SCIENCES ET LA TECHNOLOGIE

SASKATOON (Saskatchewan), le 9 mai 1991 — Le Conseil des ministres des Sciences et de la Technologie s'est réuni aujourd'hui pour discuter de plusieurs questions, notamment d'un cadre de travail national en matière de sciences et de technologie, et a rendu public un document sur la question. Ce cadre de travail favorise une participation plus active des gouvernements, des entreprises, des syndicats, des universités et des instituts de recherche et vise à resserrer les liens entre eux.

Tous les gouvernements présents ont adopté le cadre de travail, à l'exception de l'Ontario, qui a exprimé certaines réserves à propos de la publication du document dans sa forme actuelle.

La mise en oeuvre du cadre de travail se fera selon quatre grands thèmes, à savoir : l'accroissement de la recherche et du développement, l'intensification de l'innovation et du transfert des technologies, la mise en valeur des ressources humaines et la promotion d'une culture scientifique. Le plan met en relief 18 éléments spécifiques pour aider le Canada, pendant la décennie en cours, à renforcer sa compétitivité à l'échelle internationale et à assurer sa prospérité.

En 1990, on avait préparé un document de consultation qui avait ensuite été remanié en fonction des remarques recueillies auprès de chacun des gouvernements consultés. Les ministres ont aujourd'hui remercié les intervenants de tous les secteurs qui avaient donné des conseils pour la préparation du cadre de travail.

Le Conseil a passé en revue les plans de mise en oeuvre et a défini la première série d'initiatives que les gouvernements participants pourraient entreprendre en collaboration. Les ministres s'efforcent de créer des possibilités de collaboration et de mettre en place des mécanismes en vue d'allouer plus efficacement les ressources disponibles aux fins d'investissements en sciences et en technologie. On prévoit de poursuivre les discussions avec les divers intervenants, de façon à connaître leur opinion sur certains éléments du plan et à en suivre de près la mise en oeuvre.

Le Conseil, qui regroupe les ministres responsables des sciences et de la technologie des gouvernements fédéral, provinciaux et territoriaux, a été créé en 1987 en vue de surveiller la mise en oeuvre de la Politique nationale en matière de sciences et de technologie. La rencontre qui a eu lieu aujourd'hui était coprésidée par le ministre fédéral des Sciences, M. William Winegard, et le ministre de la Diversification économique et du Commerce de la Saskatchewan, M. Grant Schmidt. La prochaine réunion du Conseil devrait se tenir à l'automne prochain.

- 30 -

DOCUMENT: 830-393/011

FEDERAL-PROVINCIAL-TERRITORIAL MEETING OF THE COUNCIL OF SCIENCE AND TECHNOLOGY MINISTERS

Press Communiqué

Science and Technology Ministers Launch Innovators in the Schools

Council of Science and Technology Ministers Secretariat

SASKATOON, Saskatchewan
May 9, 1991

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Science and Technology Ministers Launch "*Innovators in the Schools*"

Saskatoon, Saskatchewan, May 9, 1991 -- Today, federal Minister for Science, William C. Winegard, and Saskatchewan Minister of Economic Diversification and Trade, Grant Schmidt, announced that federal, provincial, and territorial ministers responsible for science and technology would support a national network of *"Innovators in the Schools"*, as part of the National Science and Technology Framework for Action.

The "*Innovators in the Schools*" initiative will identify engineers and scientists willing to visit secondary and elementary schools, to speak to students and teachers about science and technology studies and careers. *"Innovators in the Schools"* projects will be in place in almost every part of Canada by Autumn, 1991.

"By the year 2000, Canada will face a critical shortage of scientific and engineering personnel," said Minister Winegard. "This program, like the federal Canada Scholarships Program, will work closely with individual firms and professional bodies, as well as with provincial and territorial governments. It responds to this need in order to maintain our competitiveness and quality of life."

"Parents, educators, and industry recognize the need to do more to encourage our students to continue studies leading to science, engineering, and technology fields," noted Saskatchewan Minister Schmidt. *"Innovators in the Schools"* will help to motivate our students to maintain their science and maths skills, and to pursue science, engineering, technical, and technology professions."

As part of the National Science and Technology Framework for Action, "*Innovators in the Schools*" will help to develop human resources and to promote a science culture in Canada. It reinforces similar initiatives already implemented by some governments.

DOCUMENT: 830-393/011

RÉUNION FÉDÉRALE-PROVINCIALE-TERRITORIALE DU CONSEIL DES MINISTRES DES SCIENCES ET DE LA TECHNOLOGIE

Communiqué de presse

Les ministres des Sciences et de la Technologie lancent

Les innovateurs à l'école

Secrétariat du Conseil des ministres des sciences
et de la technologie

SASKATOON (Saskatchewan)
Le 9 mai 1991

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Les ministres des Sciences et de la Technologie lancent *Les innovateurs à l'école*

Saskatoon (Saskatchewan), le 9 mai 1991 -- Le ministre fédéral des Sciences, M. William C. Winegard, et le ministre de la Diversification économique et du Commerce de la Saskatchewan, M. Grant Schmidt, ont annoncé aujourd'hui que les ministres fédéraux, provinciaux et territoriaux responsables des sciences et de la technologie appuieraient un réseau national appelé *Les innovateurs à l'école*, qui s'inscrit dans le nouveau cadre de travail national en matière de sciences et de technologie.

Par l'intermédiaire de l'initiative *Les innovateurs à l'école*, on fera appel à des ingénieurs et à des scientifiques disposés à se rendre dans les écoles secondaires et primaires pour renseigner les élèves et les enseignants sur les études et les carrières en sciences et en technologie. D'ici l'automne 1991, on mettra en œuvre dans presque toutes les régions du Canada des projets *Les innovateurs à l'école*.

«D'ici l'an 2000, le Canada fera face à une grave pénurie de scientifiques et d'ingénieurs, a déclaré le ministre Winegard. Par l'intermédiaire de cette initiative et du programme Bourses Canada, le gouvernement fédéral collaborera étroitement avec diverses entreprises et associations professionnelles, ainsi qu'avec les gouvernements provinciaux et territoriaux. Il s'emploie ainsi à combler ce besoin, afin de maintenir notre compétitivité et notre qualité de vie.»

«Les parents, les éducateurs et l'industrie sont conscients de la nécessité d'encourager davantage nos élèves à poursuivre des études dans les domaines des sciences, du génie et de la technologie, a mentionné le ministre Schmidt de la Saskatchewan. Le réseau *Les innovateurs à l'école* motivera nos élèves à maintenir leurs compétences en sciences et en mathématiques et à poursuivre des carrières en sciences, en génie et en technologie.»

Dans la foulée du cadre de travail national en matière de sciences et de technologie, le réseau *Les innovateurs à l'école* contribuera à perfectionner les ressources humaines et à promouvoir une culture scientifique au Canada. Il vient par ailleurs renforcer les initiatives du même genre que certains gouvernements ont déjà mis en oeuvre.

DOCUMENT: 830-393/015

Government Publications

FEDERAL-PROVINCIAL-TERRITORIAL MEETING OF THE COUNCIL OF SCIENCE AND TECHNOLOGY MINISTERS

RÉUNION FÉDÉRALE-PROVINCIALE-TERRITORIALE DU CONSEIL DES MINISTRES DES SCIENCES ET DE LA TECHNOLOGIE

SASKATOON, Saskatchewan
May 9, 1991

SASKATOON (Saskatchewan)
Le 9 mai 1991

LIST OF PUBLIC DOCUMENTS

LISTE DES DOCUMENTS PUBLICS

DOCUMENT NO. NUMÉRO DU DOCUMENT	SOURCE ORIGINE	TITLE TITRE
830-393/005 (R)	CSTMS	National Science and Technology Framework for Action
	SCMST	Cadre de travail national en matière de sciences et de technologie
830-393/008	CSTMS	Press Communiqué - National Science and Technology Action Plan Released
	SCMST	Communiqué de presse - Parution du plan d'action national pour les sciences et la technologie
830-393/011	CSTMS	Press Communiqué - Science and Technology Ministers Launch Innovators in the Schools
	SCMST	Communiqué de presse - Les ministres des Sciences et de la Technologie lancent Les innovateurs à l'école
830-393/015	Secretariat	List of Public Documents
	Secrétariat	Liste des documents publics

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DOCUMENT: 830-398/017

28TH ANNUAL CONFERENCE OF THE COUNCIL OF MINISTERS RESPONSIBLE FOR TRANSPORTATION AND HIGHWAY SAFETY

Communiqué

WINNIPEG, Manitoba
September 19, 1991

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TRANSPORT MINISTERS MEET

FOR IMMEDIATE RELEASE

WINNIPEG, MANITOBA. - September 19, 1991 -- At the Annual Meeting of the Council of Ministers Responsible for Transportation and Highway Safety, Ministers discussed concerns of the trucking industry, transportation accessibility for disabled persons, the National Highways Policy, the National Rail Network Study and other transportation and safety issues.

The Ministers acknowledged that the trucking industry is essential to the nation's transportation requirements, and agreed to measures intended to help the industry attain better market stability.

In those jurisdictions where problems exist, the Ministers agreed in principle to seek legislation for responsibility and disclosure requirements for load brokers, and to increase business opportunities for owner-operators by allowing greater licensing flexibility such as sub-contracting with more than one carrier without having to reregister their vehicles.

On the issue of carrier-owner-operator relations, the Ministers directed the Canadian Council of Motor Transport Administrators to develop model contractual standards in consultation with interested parties for the setting out of their respective rights and obligations. The Ministers acknowledged that legislation may be introduced in some jurisdictions to achieve this end.

Ministers expressed their support for voluntary business education for owner-operators being developed under the auspices of Employment and Immigration Canada's Industrial

Adjustment Services Committee. All provinces and territories urged owner-operators to initiate voluntary business education through their associations.

Ministers noted that a number of recommendations to assist the trucking industry as a whole have been made by the Federal Minister's Task Force on Trucking Issues, and are currently being reviewed on an urgent basis.

Ministers received interim results of Phase IV of the National Highway Policy Study which began in 1987. They directed that work continue on the examination of cost sharing formulas, funding sources and an effective and equitable mechanism for implementation of a National Highways Policy. This work is to be completed by early 1992. The Ministers recognized the importance of the National Highway Policy in complementing the nation's trade competitive position and believe that substantial improvements to the system are needed to ensure its safe operation and to reduce operating costs to the users of this network.

As a measure to enhance road safety, the Ministers signed a reciprocal agreement on Mandatory Periodic Commercial Motor Vehicle Inspections. Widely supported by industry, the agreement commits all jurisdictions to implementing compulsory periodic inspection programs for commercial vehicles by January 1, 1992, and provides for reciprocal recognition of those inspections across Canada.

The Ministers also agreed to sign a Memorandum of Understanding on Vehicle Weights and Dimensions to extend a 1988 agreement which will include an additional four categories of vehicles. The new national standards incorporate the findings of stability and control research and will result in improvements in the design and safe operation of vehicles. This further move to uniformity will reduce barriers to interprovincial trade.

Increasing the length limit of intercity buses will remove the current regulatory barrier to the use of the prototype 45-foot buses which incorporate wheelchair lifts in the design. Further consultations will be required within the various jurisdictions.

Ministers discussed the matter of intercity bus accessibility for disabled persons and the progress achieved to date. The Federal Minister advised that a listing of provincial-territorial initiatives will be available from Transport Canada later this fall.

The Ministers discussed the important role of rail infrastructure in meeting the nation's freight transportation needs and in assisting Canada's competitive position in the world economy.

The Ministers reaffirmed the need to ensure there is an efficient rail choice in Canada's future and agreed to work together to examine the long-term need for rail infrastructure within the transportation system. The Ministers directed the Council of Deputy Ministers to work with the freight and passenger rail companies and to assess the needs of shippers, rail user groups, labour and communities in developing recommendations on a national rail network.

The Federal Minister provided an update on negotiations to liberalize air services between Canada and the United States. The Provincial and Territorial Ministers commended the Federal consultative process and the acknowledgement by the Federal Minister of provincial concerns in this matter.

Ministers were pleased to announce more Canadians are buckling up. The 1990 goal of 80% was exceeded - and the rate of seat belt use in 1991 was 85% nationally. In reaching total compliance the Ministers reaffirmed an interim goal of 95% by 1995.

The Council of Ministers released the 1990 Canadian Motor Vehicle Traffic Accident Statistics which indicate that there were 3,957 road accident fatalities in Canada, representing a decrease of 6.9% over 1989 fatalities. Ministers noted that this is the lowest number of fatalities since 1962.

The Ministers also endorsed a number of environmental initiatives that the Transportation Association of Canada will be undertaking in the coming months. These include the development of a code of environmental ethics for adoption by TAC's members.

- 30 -

DOCUMENT: 830-398/017

28E CONFÉRENCE ANNUELLE DU CONSEIL DES MINISTRES RESPONSABLES DES TRANSPORTS ET DE LA SÉCURITÉ ROUTIÈRE

Communiqué

WINNIPEG (Manitoba)
Le 19 septembre 1991

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RENCONTRE DES MINISTRES DES TRANSPORTS

DIFFUSION IMMÉDIATE

WINNIPEG (MANITOBA) - Le 19 septembre 1991 -- Au cours de la réunion annuelle du Conseil des ministres responsables des transports et de la sécurité routière, les ministres ont examiné les préoccupations de l'industrie du camionnage, l'accessibilité des transports pour les personnes handicapées, la Politique routière nationale, l'Étude sur le réseau ferroviaire national ainsi que d'autres questions relatives aux transports et à la sécurité.

Les ministres sont convenus que le camionnage joue un rôle essentiel à la satisfaction des besoins des Canadiens en services de transport. Aussi ont-ils approuvé des mesures destinées à renforcer la stabilité de ce secteur sur le marché.

Les ministres se sont entendus sur le principe de mettre de l'avant, auprès des administrations qui connaissent des problèmes de cette nature, des mesures législatives en vue de préciser les responsabilités et les obligations d'information des courtiers de charges. Ils en feront autant pour multiplier les possibilités de marchés des propriétaires-exploitants grâce à l'octroi de licences plus souples leur permettant, par exemple, de sous-traiter avec plus d'un transporteur sans devoir refaire l'immatriculation de leurs véhicules.

Au sujet des relations entre les transporteurs et les propriétaires-exploitants, les ministres ont confié au Conseil canadien des administrateurs en transports motorisés la tâche d'élaborer, en consultation avec les parties intéressées, des clauses contractuelles modèles énonçant les droits et les obligations de chacun. Les ministres savent que certaines administrations devront peut-être prendre des mesures législatives à cette fin.

Les ministres sont d'accord pour que des programmes d'éducation professionnelle facultative soient élaborés pour les propriétaires-exploitants sous l'égide d'Emploi et Immigration Canada (Comité d'aide à l'adaptation de l'industrie). Tous les gouvernements provinciaux et territoriaux exhortent les propriétaires-exploitants à profiter de programmes de formation facultative en administration des affaires par l'entremise de leurs associations.

Les ministres ont mentionné que le Groupe de travail du ministre fédéral sur le camionnage a formulé des recommandations pour aider l'ensemble de l'industrie et qu'on les examine d'urgence actuellement.

Les ministres ont reçu les résultats préliminaires de la phase IV de l'Étude sur le réseau routier national, amorcée en 1987. Ils ont donné l'instruction de poursuivre l'examen des formules de partage des frais, l'étude des sources de financement et la mise au point de mécanismes efficaces et équitables pour la mise en oeuvre d'une politique routière nationale. Ces activités devraient être terminées vers le début de 1992. Les ministres sont conscients qu'une politique routière nationale apporterait une contribution importante à la compétitivité commerciale du pays. Selon eux, il est nécessaire d'améliorer considérablement le réseau pour en garantir l'utilisation sécuritaire et pour réduire les frais d'exploitation de ses usagers.

Afin d'améliorer la sécurité routière, les ministres ont conclu une Entente réciproque sur l'inspection périodique obligatoire des véhicules commerciaux. Très appuyée par l'industrie, cette entente engage toutes les administrations à mettre en oeuvre, au plus tard le 1er janvier 1992, des programmes d'inspection périodique obligatoire pour les véhicules commerciaux, dont les résultats seraient reconnus par toutes les administrations.

Les participants sont convenus de signer également un Protocole d'entente sur les poids et dimensions des véhicules, afin d'élargir une entente en date de 1988 par l'inclusion de quatre nouvelles catégories de véhicules. Les nouvelles normes nationales sont enrichies des résultats de recherches sur la stabilité et la maîtrise des véhicules et engendreront des

améliorations à la conception et à la sécurité d'utilisation des véhicules. Cette autre mesure d'uniformité écartera des obstacles aux commerce interprovincial.

L'accroissement de la longueur maximale permise des autocars supprimera l'interdiction réglementaire actuelle de mettre en service les nouveaux autocars de 45 pieds, lesquels sont munis d'une plate-forme de levage pour fauteuils roulants. De plus amples consultations devront avoir lieu au sein des diverses administrations.

Les ministres ont étudié la question de l'accèssibilité des autocars aux personnes handicapées et les progrès réalisés jusqu'à ce jour. Le ministre fédéral a annoncé que Transports Canada diffusera cet automne un recueil des initiatives provinciales-territoriales en la matière.

Les ministres se sont penchés sur le rôle important que joue le réseau ferroviaire pour répondre aux besoins des Canadiens en services de transport de marchandises et pour rehausser la compétitivité du Canada sur la scène économique mondiale.

Le ministres ont souligné l'importance, pour le Canada de demain, de pouvoir compter sur un réseau ferroviaire efficace et ils sont convenus d'examiner ensemble les besoins à long terme propres à l'infrastructure ferroviaire dans le secteur des transports. Les ministres ont demandé au Conseil des sous-ministres d'étudier la question avec les transporteurs de marchandises et de voyageurs du secteur ferroviaire et d'évaluer les besoins des expéditeurs, des divers groupes d'usagers, des syndicats et des communautés, en vue de formuler des recommandations à l'égard du réseau ferroviaire national.

Le ministre fédéral a fait le bilan sur les négociations visant à libéraliser les services aériens entre le Canada et les États-Unis. Les ministres provinciaux et territoriaux l'ont félicité pour la haute qualité du processus consultatif fédéral et pour avoir tenu compte de leurs préoccupations.

Les ministres ont annoncé avec plaisir que de plus en plus de Canadiens se servent de la ceinture de sécurité. L'objectif d'élever leur proportion à 80 pour cent dès 1990 a été dépassé. En 1991, 85 pour cent des Canadiens bouclent la ceinture dans l'ensemble du pays. Confiants d'atteindre l'objectif ultime d'une parfaite conformité, les ministres se sont dits toujours d'accord pour hausser la proportion des utilisateurs à 95 pour cent d'ici 1995.

Le Conseil des ministres a rendu publiques les Statistiques des accidents de la route au Canada de 1990. En 1990, 3 957 personnes ont perdu la vie des suites d'accidents de la route au Canada, soit une baisse de 6,9 pour cent par rapport à 1989. Les participants ont constaté que des chiffres aussi bas n'avaient pas été enregistrés depuis 1962.

Les ministres ont également approuvé un certain nombre d'initiatives environnementales dont l'Association des transports du Canada entreprendra l'exécution au cours des prochains mois. Notons, entre autres, l'élaboration d'un code déontologique de l'environnement destiné à être adopté par tous les membres de l'ATC.

- 30 -

Government Publication

28TH ANNUAL CONFERENCE OF THE COUNCIL OF MINISTERS RESPONSIBLE FOR TRANSPORTATION AND HIGHWAY SAFETY

28E CONFÉRENCE ANNUELLE DU CONSEIL DES MINISTRES RESPONSABLES DES TRANSPORTS ET DE LA SÉCURITÉ ROUTIÈRE

WINNIPEG, Manitoba
September 19, 1991

WINNIPEG (Manitoba)
Le 19 septembre 1991

LIST OF PUBLIC DOCUMENTS

LISTE DES DOCUMENTS PUBLICS

DOCUMENT NO. NUMÉRO DU DOCUMENT	SOURCE ORIGINE	TITLE TITRE
830-398/017	Conference	Communiqué
	Conférence	Communiqué
830-398/019	Secretariat	List of Public Documents
	Secrétariat	Liste des documents publics

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Document: 830-399/001

48TH ANNUAL MINES MINISTERS' CONFERENCE

Schedule of Events
Final Agenda

HALIFAX, Nova Scotia
September 22-24, 1991

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48th MINES MINISTERS' CONFERENCE

Halifax Hilton
Halifax, Nova Scotia

Hosted by the
NOVA SCOTIA DEPARTMENT OF NATURAL RESOURCES
September 22 to 25, 1991

SCHEDULE OF EVENTS

SUNDAY, 22 September 1991

09:00 to 17:00	Provincial Geologists' Committee (closed meeting)	Board Room
11:00 to 16:30	Public Relations Committee, Mining Association of Canada	Commonwealth B
13:30 to 16:00	Intergovernmental Working Group (Closed Meeting)	Lunenburg Room
13:30 to 16:30	Joint Mining Associations	Northumberland Room
16:30 to 17:30	Mining Association of Canada Executive Meeting	Northumberland Room
15:00 to 17:00	REGISTRATION	Reception Area
18:00 to 20:00	WELCOMING RECEPTION Light refreshments. Bus shuttle between the Hotel and the Maritime Museum of the Atlantic beginning at 17:30.	Maritime Museum of the Atlantic

MONDAY, 23 September 1991

07:00 to 09:00	BREAKFAST for Delegates	Commonwealth B
07:30 to 09:00	BREAKFAST for Ministers	Board Room
07:30 to 09:00	BREAKFAST for Deputy Ministers	Harbour Suite A
08:30 to 14:00	REGISTRATION	Reception Area
09:00 to 10:00	Intergovernmental Working Group (Closed Meeting)	Lunenburg
10:00 to 10:30	NUTRITION BREAK	Reception Area
10:30 to 12:00	PLENARY SESSION 1 (Open Session) Session Open to All Delegates and the Media (print, TV, radio)	Commonwealth A

Theme: *The Importance of the Mineral Industry to Canada*
Key Note Talks on the Theme by:
Honourable Jake Epp, *Minister of Energy, Mines and Resources Canada*
Mr. Leo Gerard, *National Director, United Steelworkers of America*
Mr. Keith Hendrick, *Chairman, Noranda Minerals Inc.*

12:00 to 14:00	LUNCH	Atlantic Ballroom
14:00 to 17:00	WORKSHOPS (Closed to the media)	
	1. Mining and the Environment	Commonwealth B
	2. Human Resources and the Mineral Industry	Harbour B
	3. Financial Concerns of the Mineral Industry	Northumberland
	4. Challenges in Mineral Exploration	Cornwallis
	5. Public Perception of the Mineral Industry	Harbour A
	6. Global Concerns for the Mineral Industry	Lunenburg

Workshops will have 2.5 hours for deliberations and discussions. The format will vary but may include short talks by resource people, briefs and discussions focusing on the issues. Each workshop will have co-chairpersons, four to seven resource people and a secretary.

18:00 to 20:00	HARBOUR CRUISE Light refreshments. Bus between the Hotel and Cable Wharf beginning at 17:30.	Harbour Queen I

TAB

TUESDAY, 24 September 1991

07:00 to 09:00	BREAKFAST for Delegates	Commonwealth B
07:30 to 09:00	BREAKFAST for Ministers and Deputy Ministers	Harbour Suite A
08:30 to 10:45	REGISTRATION	Reception Area
09:00 to 10:15	PLENARY SESSION 2 (Open Session) Session Open to all Delegates and the Media (print, TV, radio) Presentation of Workshop Reports; Open Discussion by Delegates.	Commonwealth A
10:15 to 10:45	NUTRITION BREAK	Reception Area
10:45 to 12:30	PLENARY SESSION 2 (Open Session) Briefs from Industry Associations: 1. Chamber of Mineral Resources of Nova Scotia 2. Coal Association of Canada 3. Prospectors and Developers Association of Canada 4. Mining Association of Canada 5. Other Briefs for reference (See delegates' binder.)	Commonwealth A
12:30 to 14:00	LUNCH	Atlantic Ballroom
14:00 to 15:00	Individual Meetings: Ministers and provincial/territorial delegates	
14:00 to 17:00	MILUC Meeting (Ralph Cheeseman)	Northumberland Room
15:00 to 15:15	NUTRITION BREAK	
15:00 to 17:00	Chamber of Mineral Resources of Nova Scotia Board Meeting	Commonwealth B
15:15 to 16:30	PLENARY SESSION 3 (Closed Session) (For Ministers and their staffs) 1. Review and summary of business from the Manitoba Conference. 2. Issues from Workshops and Industry Association Briefs. 3. Report on Mineral Exploration Expenditures and Flow Through Share Funding 4. Mine Reclamation. 5. Tailings Reprocessing. 6. Native Involvement in Mining.	Atlantic Ballroom
17:00 to 17:30	PRESS CONFERENCE	Atlantic Ballroom
18:00 to 21:30	RECEPTION and LOBSTER BASH Delegates from Mines Ministers' Conference and Council of Energy Ministers Meeting	Commonwealth A

WEDNESDAY, 25 September 1991

08:30 to 17:00 — TOURS OF NOVA SCOTIA'S MINERAL INDUSTRY
Vans and bus will leave front of Halifax Hilton at 08:00.

1. Rio Algom Ltd., Sn-Cu-Zn-Ag mine, East Kemptville
2. National Gypsum Canada Ltd., gypsum operation, East Milford and L.E. Shaw Ltd., clay products, Lantz
3. Curragh Resources Corporation, Westray Coal mine, Stellarton

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SPOUSAL ACTIVITY

MONDAY, 23 September 1991

10:30 to 16:30 — Tour of Nova Scotia's South Shore; Peggys Cove, Mahone Bay and Lunenburg: sightseeing, browsing, and shopping. Bus leaves from the front of the Halifax Hilton at 10:30. Return about 16:30.

DURING THE CONFERENCE, 22 TO 25 September 1991

COMMON USE ROOMS

Daily	Registration	Reception Area near Atlantic Ballroom
08:30 to 17:00	Press Room Phone: (902) 426-8604 Hotel Phone (902) 423-7231, Extension 2627	Fundy Room
08:30 to 17:00	Nova Scotia Department of Natural Resources Office Hotel Phone: (902) 423-7231, Extension 2654	Bedford Room
08:30 to 17:00	Conference Secretariat Office (CICS) Phone: (902) 426-8604 FAX: (902) 426-1828 Hotel Phone: (902) 423-7231, Extension 2653	Maritime Room

48th MINES MINISTERS' CONFERENCE
Halifax Hilton
Halifax, Nova Scotia

Hosted by the
NOVA SCOTIA DEPARTMENT OF NATURAL RESOURCES
September 22 to 25, 1991

WORKSHOPS AND ISSUES
Monday Afternoon, 14:00 to 17:00, September 23, 1991

1. **MINING AND THE ENVIRONMENT (Commonwealth B)**
Co-chairs:
Hon. Chuck MacNeil, *Minister, Nova Scotia Department of Natural Resources*
John Amirault, *President, Chamber of Mineral Resources of Nova Scotia*
Don Eldon, *Vice President, Mining Association of Canada*
Recording Secretary:
Robert Holmes, *Yukon Department of Economic Development*
Resource People:
Hennie Veldhuizen, *Noranda Minerals Inc.*
Justyna Laurie-Lean, *Mining Association of Canada*
Tony Andrews, *Prospectors and Developers Association of Canada*
John Gammon, *Ontario Ministry of Northern Development and Mines*
Frank Nolan, *Nolan Davis Associates, Halifax*
Pat Phelan, Ed Bain, Kevin Gillis, Dave Hopper, *Nova Scotia Department of Natural Resources*
Issues:
1.1 Regulatory environment (jurisdiction overlaps; environmental assessments)
1.2 Liability issues
1.3 Native rights to land
1.4 Multiple use of land
1.5 Development of Offshore Resources
1.6 Future trends in land use policy

2. **HUMAN RESOURCES AND THE MINERAL INDUSTRY (Harbour Suite B)**
Co-chairs:
Hon. Shelly Martel, *Minister, Ontario Ministry of Northern Development and Mines*
John Keenan, *Vice President, Human Resources, Falconbridge Limited*
Recording Secretary:
George Patterson, *Northwest Territories Department of Energy, Mines and Resources*
Resource People:
Leo Gerard, *United Steelworkers of America, Toronto*
Joseph Lazarovich, *Indian Affairs and Northern Development Canada*
Paul Kariya, *Indian Affairs and Northern Development Canada*
Jean-Luc Blais, *Indian Affairs and Northern Development Canada*
Robert Cooper, *Cape Breton Development Corporation*
Rod McKenzie, *Pasquiak Business Development Corporation, Manitoba*
Don Jones, *Nova Scotia Department of Natural Resources*

Issues:

2.1 Attracting, training and retaining skilled workers
2.2 Industrial disease
2.3 Native employment
2.4 Cyclic employment in the mineral industry
2.5 University programs in geology and mining engineering

3. **FINANCIAL CONCERNS OF THE MINERAL INDUSTRY (Northumberland Room)**

Co-chairs:

Hon. Harold Neufeld, *Minister, Manitoba Department of Energy and Mines*
Keith Hendrick, *Chairman, Noranda Minerals Inc.*

Recording Secretary:

Keith Brewer, *Energy, Mines and Resources Canada*

Resources People:

Ian Bayer, *Hemlo Gold Mines Inc.*
Robert Parsons, *Price Waterhouse, Toronto*
Gary MacEwen, *New Brunswick Department of Natural Resources and Energy*
Carroll James, Blair McMullin, *Nova Scotia Department of Natural Resources*

Issues:

3.1 Reclamation funding
3.2 Mineral exploration incentives
3.3 Mining taxes
3.4 Attracting investors

4. **CHALLENGES IN MINERAL EXPLORATION (Cornwallis Room)**

Co-chairs:

Hon. Rex Gibbons, *Minister, Newfoundland Department of Mines and Energy*
Fenton Scott, *President, Prospectors and Developers Association of Canada*

Recording Secretary:

Bruce MacRae, *British Columbia Ministry of Energy, Mines and Petroleum Resources*

Resources People:

Peter Dimmel, *Newfoundland and Labrador Exploration*
Don Pollock, *Corner Bay Exploration*
Ralph Cheeseman, *MILUC (Mineral Industry Land Use Committee)*
Rick Ratcliffe, John McMullin, Gord Adams, Paul Smith, *Nova Scotia Department of Natural Resources*

Issues:

4.1 Exploration and alienated lands
4.2 Mineral commodity reserves
4.3 Mineral exploration at home or elsewhere
4.4 Government intervention
4.5 Level of exploration and fiscal policy of governments
4.6 Role of prospector and junior exploration company

5. **PUBLIC PERCEPTION OF THE MINERAL INDUSTRY (Harbour Suite A)**
Co-chairs:
Hon. Maurice Byblow, *Minister, Yukon Department of Economic Development*
Isabel Mulligan, *Senior Vice President, Investor Relations, American Barrick Resources*
Recording Secretary:
Paul Dean, *Newfoundland Department of Mines and Energy*
Resource People:
Jacques Hudon, *Mining Association of Canada*
Edward Sampson, *Energy, Mines and Resources Canada*
Norm Mercer, *Newfoundland Section, Canadian Institute of Mining and Metallurgy*
Scott Smith, *Nova Scotia Sand and Gravel*
George O'Reilly, John Calder, Derek Johnston, Rob Naylor, *Nova Scotia Department of Natural Resources*
Issues:
5.1 Defining the problem
5.2 The Audience
5.3 The Message
5.4 Dealing with the intolerance of critics
5.5 Strategies for improving public perception

6. **GLOBAL CONCERNS FOR THE MINERAL INDUSTRY (Lunenburg Room)**
Co-chairs:

George Miller, *President, Mining Association of Canada*
Recording Secretary:
Mike Benson, *Saskatchewan Department of Energy and Mines*
Resource People:
Stuart Hunter, *Coal Association of Canada*
Margo Wojciechowski, *Centre for Resource Studies, Queens University*
John Hansuld, Pros*pectors and Developers Association of Canada*
Jack Garnet, *Consultant, Halifax*
Dan Murray, John Fowler, *Nova Scotia Department of Natural Resources*
Issues:
6.1 Competition and environmental regulations
6.2 Inter-country trade in recycled mineral materials
6.3 Consumption and trade patterns
6.4 Non-traditional uses of mineral-based materials
6.5 Trends in mineral commodity usage

48th MINES MINISTERS' CONFERENCE

Halifax, Nova Scotia
Halifax Hilton

GUIDELINES FOR WORKSHOP CO-CHAIRS, RECORDING SECRETARIES AND RESOURCE PEOPLE

Monday, 14:00 to 17:00, September 23, 1991

1. CO-CHAIRS

1-1 Chairperson of the workshop is the Minister. She or he will guide the proceedings.

1-2 Chair will introduce the co-chair, resource people and the recording secretary. (Perhaps after introducing these people by name, he or she could ask each person to say where they are from and what they do.)

1-3 Co-chairperson is a senior person from industry or an industry association. He or she will assist the minister in running the workshop, provide comments, act as a facilitator ask questions of delegates, and/or make a short presentation.

1-4 Workshops begin at 14:00 and end at 17:00; there is a break scheduled from 15:00 to 15:20.

1-5 Together, Chair and Co-chair will introduce the topic of the workshop and the issues.

1-6 Call upon the resource people as needed to comment on a question or to provide more information.

1-7 Attempt to cover all of the issues.

1-8 Work with the recording secretary to prepare the one page summary of the workshop.

1-9 Take part in the discussions.

2. RECORDING SECRETARY

2-1 Summarize, **in point form,** the workshop. The summary should be **one page, two at the most.** The summary can be a mix of important comments, questions unresolved, issues needing further study/action and/or recommendations for action.

2-2 Prepare summary with the co-chairs.

2-3 Give summary to Howard Donohoe or leave for him at the Bedford Room (Nova Scotia Department of Natural Resources Office).

2-3 Present the summary at Plenary Session 2 on Tuesday morning. Time for each workshop summary presentation is 5 to 10 minutes. A few questions from the assembled delegates will be possible at the end of each workshop presentation. You may wish to refer some questions to the co-chairs or resource people.

2-4 Take part in discussions during the workshop.

3. RESOURCE PEOPLE

3-1 Be prepared to add information to a discussion at the chair's request.

3-2 Answer questions at the chair's request.

3-3 Freely participate in discussions.

3-4 If desired, or requested, make a short presentation to the workshop group.

Document: 830-399/001

Traduction du Secrétariat

48e CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

Programme
Ordre du jour définitif

HALIFAX (Nouvelle-Écosse)
Du 22 au 24 septembre 1991

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48e CONFÉRENCE DES MINISTRES DES MINES
Halifax Hilton
Halifax (Nouvelle-Écosse)

Hôte:
MINISTÈRE DES RESSOURCES NATURELLES DE LA NOUVELLE-ÉCOSSE
Du 22 au 25 septembre 1991

PROGRAMME

LE DIMANCHE 22 septembre 1991

9 h à 17 h	Comité des géologues provinciaux (réunion à huis clos)	salle du conseil
11 h à 16 h 30	Comité des relations publiques Association minière du Canada	Commonwealth B
13 h 30 à 16 h	Groupe de travail intergouvernemental (réunion à huis clos)	salle Lunenburg
13 h 30 à 16 h 30	Associations minières mixtes	salle Northumberland
16 h 30 à 17 h 30	Association minière du Canada, réunion du conseil d'administration	salle Northumberland
15 h à 17 h	INSCRIPTION	hall d'accueil
18 h à 20 h	RÉCEPTION DE BIENVENUE	Musée maritime de l'Atlantique

Rafraîchissements légers. Un autobus effectuera la navette entre l'hôtel et le Musée maritime de l'Atlantique à compter de 17 h 30.

48e Conférence des ministres des Mines

LE LUNDI 23 septembre 1991

7 h à 9 h	PETIT DÉJEUNER pour les délégués	Commonwealth B	
7 h 30 à 9 h	PETIT DÉJEUNER pour les ministres	salle du conseil	
7 h 30 à 9 h	PETIT DÉJEUNER pour les sous-ministres	Harbour Suite A	
8 h 30 à 14 h	INSCRIPTION	hall d'accueil	
9 h à 10 h	Groupe de travail intergouvernemental (réunion à huis clos)	Lunenburg	
10 h à 10 h 30	PAUSE	hall d'accueil	
10 h 30 à 12 h	SÉANCE PLÉNIÈRE 1 (séance publique) Tous les délégués et les représentants des médias y ont accès (journaux, télévision et radio) Thème: L'importance de l'industrie des minéraux au Canada Les principaux exposés sur le thème seront faits par : L'honorable Jake Epp, ministre d'Énergie, Mines et Ressources Canada M. Leo Gerard, directeur national, Métallurgistes unis d'Amérique M. Keith Hendrick, président, Les Minéraux Noranda Inc.	Commonwealth A	4
12 h à 14 h	DÉJEUNER	Atlantic Ballroom	
14 h à 17 h	ATELIERS		5
	1.Les mines et l'environnement	Commonwealth B	6
	2.Les ressources humaines et l'industrie minérale	Harbour B	7
	3.Les préoccupations financières de l'industrie minérale	Northumberland	8
	4.Les défis de	Cornwallis	9

	l'exploration minière		
	5.L'idée que le public se fait de l'industrie minérale	Harbour A	10
	6.Les préoccupations globales de l'industrie minérale	Lunenburg	11

Les ateliers donneront l'occasion de discuter et de débattre des questions pendant 2,5 heures. La formule pourra varier, mais il y aura entre autres de brefs exposés de spécialistes, présentation de mémoires et des discussions axées sur des questions soulevées par la province hôte. Chaque atelier comptera des coprésidents, entre quatre et sept personnes-ressources et un(une) secrétaire.

18 h à 20 h	CROISIÈRE DANS LE PORT Rafraîchissements légers. Un autobus effectuera la navette entre l'hôtel et le quai Cable à compter de 17 h 30	Harbour Queen I

LE MARDI 24 septembre 1991

7 h à 9 h	PETIT DÉJEUNER pour les délégués	Commonwealth B
7 h 30 à 9 h	PETIT DÉJEUNER pour les ministres et les sous-ministres	Harbour Suite A
8 h 30 à 10 h 45	INSCRIPTION	hall d'accueil
9 h à 10 h 15	SÉANCE PLÉNIÈRE 2 (séance publique) Tous les délégués et les représentants des médias y ont accès (journaux, télévision et radio) Présentation des rapports des ateliers; discussion libre des délégués	Commonwealth A 12
10 h 15 à 10 h 45	PAUSE	hall d'accueil
10 h 45 à 12 h 30	SÉANCE PLÉNIÈRE 2 (séance publique) Mémoires des associations industrielles 1.Chambre des ressources minérales de la Nouvelle-Écosse 13 2.Association charbonnière du Canada 14 3.Association canadienne des prospecteurs et entrepreneurs 15 4.Association minière du Canada 16 5.Autres mémoires pour consultation (voir le cahier des délégués) 17	Commonwealth A
12 h 30 à 14 h	DÉJEUNER	Atlantic Ballroom
14 h à 15 h	Réunions distinctes : ministres et délégués des provinces et des territoires	

14 h à 17 h	Réunion du CIMAT (R. Cheeseman)	salle Northumberland
15 h à 15 h 15	PAUSE	
15 h à 17 h	Réunion du conseil de la chambre des ressources minérales de la Nouvelle-Écosse	Commonwealth B
15 h 15 à 16 h 30	SÉANCE PLÉNIÈRE 3 (séance à huis clos) (pour les ministres et leur personnel) 1.Étude et résumé des questions issues de la conférence du Manitoba 2.Questions émanant des ateliers et tirées des mémoires des associations industrielles 3.L'état de l'exploration minière et les actions accréditives 4.Assainissement des mines 5.Retraitement des stériles 6.La participation des autochtones dans le secteur minier	Atlantic Ballroom
17 h à 17 h 30	CONFÉRENCE DE PRESSE	Atalntic ballroom
18 h 30 à 21 h 30	RÉCEPTION ET SOUPER AU HOMARD DE LA NOUVELLE-ÉCOSSE Les délégués de la Conférence des ministres des Mines et ceux de la réunion du Conseil des ministres de l'Énergie	Commonwealth A

LE MERCREDI 25 septembre 1991

8 h 30 À 17 h	VISITES DE L'INDUSTRIE MINÉRALE DE LA NOUVELLE-ÉCOSSE Les fourgonnettes et les autobus partiront de l'entrée à l'avant du Hilton Halifax à 8 h 1.Rio Algom Ltd., mine Sn-Cu-Zn-Ag, East Kempville 2.National Gypsum Canada Ltd., fabrication de gypse, East Milford et L.E. Shaw Ltd., produits d'argile, Lantz 3.Curragh Resources Corporation, mine de charbon Westray, Stellarton

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ACTIVITÉS À L'INTENTION DES CONJOINTS

LE LUNDI 23 septembre 1991

10 h 30 à 16 h 30	Visite de la côte sud de la Nouvelle-Écosse; Peggys Cove, Mahone Bay et Lunenburg : excursions, flâneries et magasinage Les autobus partiront de l'entrée à l'avant du Hilton à 10 h 30 et y reviendront vers 16 h 30

AU COURS DE LA CONFÉRENCE : du 22 au 25 septembre 1991

SALLES DE LA CONFÉRENCE

Tous les jours	Inscription	hall d'accueil près de la salle Atlantic
8 h 30 à 17 h	salle de presse n° de tél.:(902) 426-8604 n° de tél. de l'hôtel : (902) 423-7231, poste 2627	salle Fundy
8 h 30 à 17 h	bureau du ministère des Ressources naturelles de la Nouvelle-Écosse n° de tél. de l'hôtel : (902) 423-7231, poste 2654	salle Bedford

8 h 30 à 17 h	bureau du Secrétariat des conférences (SCIC) n° de tél.:(902) 426-8604 télécopieur: (902) 426-1828 n° de tél. de l'hôtel : (902) 423-7231, poste 2653	salle Maritime

48e CONFÉRENCE DES MINISTRES DES MINES
Halifax Hilton
Halifax (Nouvelle-Écosse)

Hôte:
MINISTÈRE DES RESSOURCES NATURELLES DE LA NOUVELLE-ÉCOSSE
Du 22 au 25 septembre 1991

ATELIERS ET QUESTIONS
Lundi après-midi, de 14 h à 17 h, le 23 septembre 1991

1. **LES MINES ET L'ENVIRONNEMENT (Commonwealth B)**
   Coprésidents :
   Honorable Chuck MacNeil, ministre des Ressources naturelles de la Nouvelle-Écosse
   John Amirault, président, chambre des ressources minérales de la Nouvelle-Écosse
   Don Eldon, vice-président, Association minière du Canada
   Secrétaire :
   Robert Holmes, ministère du Développement économique du Yukon
   Personnes-ressources :
   Hennie Veldhuizen, Minéraux Noranda Inc.
   Justyna Laurie-Lean, Association minière du Canada
   Tony Andrews, Association canadienne des prospecteurs et entrepreneurs
   John Gammon, ministère du Développement du Nord et des Mines de l'Ontario
   Frank Nolan, Nolan Davis Associates, Halifax
   Pat Phelan, Ed Bain, Kevin Gillis, Dave Hopper, ministère des Ressources naturelles de la Nouvelle-Écosse
   Questions à l'étude :
   1.1 Contexte réglementaire (chevauchement des pouvoirs, évaluations environnementales)
   1.2 Risques
   1.3 Droits territoriaux des autochtones
   1.4 Aménagement multiple du territoire
   1.5 Mise en valeur des ressources au large des côtes
   1.6 Tendances futures en matière d'aménagement du territoire

2. **LES RESSOURCES HUMAINES ET L'INDUSTRIE MINÉRALE (Harbour Suite B)**
   Coprésidents :
   Honorable Shelly Martel, ministre du Développement du Nord et des Mines de l'Ontario
   John Keenan, vice-président, ressources humaines, Falconbridge Limitée

Secrétaire :
George Patterson, ministère de l'Énergie, des Mines et des Ressources des Territoires du Nord-Ouest
Personnes-ressources
Leo Gerard, Métallurgistes unis d'Amérique, Toronto
Joseph Lazarovich, Affaires indiennes et du Nord Canada
Paul Kariya, Affaires indiennes et du Nord Canada
Jean-Luc Blais, Affaires indiennes et du Nord Canada
Robert Cooper, Société de développement du Cap-Breton
Rod McKenzie, Pasquiak Business Development Corporation, Manitoba
Don Jones, ministère des Ressources naturelles de la Nouvelle-Écosse
Questions à l'étude :
2.1 Travailleurs compétents: les attirer, les former et les conserver
2.2 Maladies industrielles
2.3 Chômage chez les autochtones
2.4 Emplois cycliques dans l'industrie minérale
2.5 Programmes universitaires en géologie et en génie minier

3. **LES PRÉOCCUPATIONS FINANCIÈRES DE L'INDUSTRIE MINÉRALE (salle Northumberland)**
Coprésidents :
Honorable Harold Neufeld, ministre de l'Énergie et des Mines du Manitoba
Keith Hendrik, président, Minéraux Noranda Inc.
Secrétaire :
Keith Brewer, Énergie, Mines et Ressources Canada
Personnes-ressources :
Ian Bayer, Hemlo Gold Mines Inc.
Robert Parsons, Price Waterhouse, Toronto
Gary MacEwen, ministère des Ressources naturelles et de l'Énergie du Nouveau-Brunswick
Carroll James, Blair McMullin, ministère des Ressources naturelles de la Nouvelle-Écosse
Questions à l'étude :
3.1 Financement de la remise en état
3.2 Encouragements à l'exploration minière
3.3 Impôts sur les mines
3.4 Attirer les investisseurs

4. **LES DÉFIS DE L'EXPLORATION MINIÈRE (salle Cornwallis)**
Coprésidents :
Honorable Rex Gibbons, ministre des Mines et de l'Énergie de Terre-Neuve
Fenton Scott, président, Association canadienne des prospecteurs et entrepreneurs

Secrétaire :
Bruce MacRae, ministère de l'Énergie, des Mines et des Richesses pétrolières de la Colombie-Britannique
Personnes-ressources :
Peter Dimmel, Newfoundland and Labrador Exploration
Don Pollock, Corner Bay Exploration
Ralph Cheeseman, Comité de l'industrie minérale sur l'accès au territoire
Rick Ratcliffe, John McMullin, Gord Adams, Paul Smith, ministère des Ressources naturelles de la Nouvelle-Écosse
Questions à l'étude :
4.1 Exploration et terres aliénées
4.2 Réserves de produits minéraux
4.3 Exploration minière dans la région ou ailleurs
4.4 Intervention gouvernementale
4.5 Niveau d'exploration et politique fiscale des gouvernements
4.6 Rôle des prospecteurs et des petites sociétés d'exploration

5. **L'IDÉE QUE LE PUBLIC SE FAIT DE L'INDUSTRIE MINÉRALE (Harbour Suite A)**
Coprésidents :
Honorable Maurice Byblow, ministre du Développement économique du Yukon
Isabel Mulligan, vice-présidente principale, Investor Relations, American Barrick Resources
Secrétaire :
Paul Dean, ministère des Mines et de l'Énergie de Terre-Neuve
Personnes-ressources :
Jacques Hudon, Association minière du Canada
Edward Sampson, Énergie, Mines et Ressources Canada
Norm Mercer, Institut canadien des mines et de la métallurgie, section de Terre-Neuve
Scott Smith, Nova Scotia Sand and Gravel
George O'Reilly, John Calder, Derek Johnston, Rob Naylor, ministère des Ressources naturelles de la Nouvelle-Écosse
Questions à l'étude :
5.1 Définir le problème
5.2 Le public
5.3 Le message
5.4 L'intolérance de la critique
5.5 Stratégies pour améliorer l'idée que se fait le public

6. LES PRÉOCCUPATIONS GLOBALES DE L'INDUSTRIE MINÉRALE (salle Lunenburg)

Coprésidents :

George Miller, président, Association minière du Canada

Secrétaire :

Mike Benson, ministère de l'Énergie et des Mines de la Saskatchewan

Personnes-ressources :

Stuart Hunter, Association charbonnière canadienne
Margo Wojciechoowski, Centre for Resources Studies, Queens University
John Hansuld, Association canadienne des prospecteurs et entrepreneurs
Jack Garnet, expert-conseil, Halifax
Dan Murray, ministère des Ressources naturelles de la Nouvelle-Écosse

Questions à l'étude :

6.1 Compétition et règlements environnementaux
6.2 Commerce international des minéraux recyclés
6.3 Consommation et tendances commerciales
6.4 Emplois non traditionnels de matériaux à base de minéraux
6.5 Tendances de l'emploi de produits minéraux

DIRECTIVES À L'INTENTION DES COPRÉSIDENTS,
DES SECRÉTAIRES ET DES PERSONNES-RESSOURCES DES ATELIERS

Le lundi 23 septembre 1991, de 14 h à 17 h

1. COPRÉSIDENTS

1.1 Le ministre préside l'atelier et guide les travaux.

1-2 Le président présente le coprésident, les personnes-ressources et le secrétaire. (Après les présentations, le ministre peut demander à chacune de ces personnes de mentionner leur service d'attache et de préciser leurs fonctions.)

1-3 Le coprésident est une personne importante au sein de l'industrie ou d'une association professionnelle. Il aide le président à diriger l'atelier, fait des observations, joue le rôle d'animateur, répond à des questions des délégués ou fait un bref exposé.

1-4 Les ateliers commencent à 14 h et se terminent à 17 h. Une pause est prévue de 15 h à 15 h 20.

1-5 Le président et le coprésident abordent ensemble le thème de l'atelier.

1-6 Ils font appel aux personnes-ressources au besoin pour que celles-ci fassent des observations ou fournissent plus de renseignements.

1-7 Ils tentent d'aborder toutes les questions.

1-8 De concert avec le secrétaire, ils rédigent un résumé d'une page des travaux de l'atelier.

1-9 Ils participent à la discussion.

2. SECRÉTAIRE

2-1 Il résume **en abrégé** les travaux de l'atelier. Le résumé doit être d'**une page, deux au plus**. Le résumé peut être un amalgame d'observations importantes, de questions en suspens, de questions qui doivent être approfondies, de mesures, de recommandations.

2-2 Il rédige le résumé en collaboration avec les coprésidents.

2-3 Il remet le résumé à Howard Donohoe ou le lui laisse à la salle Bedford (bureau du ministère des Ressources naturelles de la Nouvelle-Écosse).

2-4 Il présente le résumé au cours de la séance plénière 2, mardi matin. La présentation dure de 5 à 10 minutes. Les délégués pourront poser quelques questions à la fin de chaque exposé. Vous pouvez soumettre certaines questions aux coprésidents ou aux personnes-ressources.

2-5 Il participe aux discussions de l'atelier.

3 PERSONNES-RESSOURCES

3-1 Elles doivent être prêtes à fournir des renseignements à la demande du président.

3-2 Elles répondent aux questions du président.

3-3 Elles participent à la discussion.

3-4 Elles peuvent faire un bref exposé si elles le désirent ou si on le leur demande.

Document: 830-399/004

48TH ANNUAL MINES MINISTERS' CONFERENCE

Brief Presented to
Mines Ministers Conference

Chamber of Mineral Resources of Nova Scotia

HALIFAX, Nova Scotia
September 22-24, 1991

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CHAMBER of MINERAL
RESOURCES of
NOVA SCOTIA

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CHAMBER OF MINERAL RESOURCES

OF

NOVA SCOTIA

BRIEF

PRESENTED TO

MINES MINSTERS CONFERENCE

24 SEPTEMBER 1991

HALIFAX

NOVA SCOTIA

Table of Contents

Chamber of Mineral Resources of Nova Scotia	Page	1
Nova Scotia A Mining Province		3
Associations Briefs		5
Public Image of Mining		6
Public Awareness Program		8
Recommendations		12

Mission Statement

To ensure Nova Scotia is recognized as a province with world class mineral resources worthy of investment.

To foster the entrepreneurial spirit to explore and develop mineral deposits.

To ensure that government policies provided a framework for a competitive mining industry within the world marketplace.

To carry out an ongoing communications program that identifies the mining industry as responsible corporate citizens, creators of wealth and long term stable employment and which promotes responsible environmental and social attitudes.

Board of Directors Chamber of Mineral Resources of Nova Scotia, 1990

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J. Amirault, Jacques, Whitford & Assoc.

VICE PRESIDENT
Scott Smith, N.S. Sand & Gravel

TREASURER
B. Reed, Atlantic Explosives

PAST PRESIDENT
K. Collison, Rio Kemptville Tin Corp.

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Tony Green, Falconbridge Ltd.

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Greg Isenor, AquaGold Resources

William McCormick, Canadian Salt Company

James Patterson, Nolan Davis

John Hopkinson, Victoria Mining

Van Penick, McInnes Cooper

Alex Thomson, Tri-Explorations

48th ANNUAL MINES MINISTERS CONFERENCE

HALIFAX, NOVA SCOTIA

SEPTEMBER 24, 1991

PRESENTED BY: John A. Amirault, President, CMRNS

CHAMBER OF MINERALS RESOURCES OF NOVA SCOTIA

The Chamber of Mineral Resources of Nova Scotia was founded in 1981 to promote and encourage the development of the mineral resources sector of Nova Scotia. In this role the Chamber is cognizant of the need for orderly development and the protection of the environment. It endeavours to convey to government the views of its membership on legislation, regulations and procedures affecting the sector and to inform and educate the public with respect to work being undertaken to develop the province's mineral resources.

The Chamber has a current membership of approximately 130 companies and individuals involved in exploration, development and servicing the mining industry in Nova Scotia. In the late 1980's, the sector was responsible for approximately 11,000 jobs and output of more than half a billion dollars.

The Chamber is a voluntary organization, controlled by an elected Board of Directors and Executive appointed annually with administration provided under contract by the Canadian Manufacturers' Association. The Chamber is funded by membership dues in conjunction with an annual contract from the Nova Scotia Department of Natural Resources.

Mission Statement

The goals of the Chamber are best summarized by the mission statement adopted in 1990:

> To ensure Nova Scotia is recognized as a province with world class mineral resources worthy of investment.
>
> To foster the entrepreneurial spirit to explore and develop mineral deposits.
>
> To ensure that government policies provide a framework for a competitive mining industry within the world market place.
>
> To carry out an ongoing communications program that identifies the mining industry as responsible corporate citizens, creators of wealth and long term stable employment and which promotes responsible environmental and social attitudes.

Environmental Policy

In step with modern times, the Chamber has also adopted an environmental policy (see following page) similar to that which was adopted by MAC. It is our belief this policy will encourage our membership to be environmentally responsible and will promote positive attitudes within our own membership and also the public.

Member companies of the Chamber of Mineral Resources of Nova Scotia are committed to the concept of sustainable development which requires balancing good stewardship in the protection of human health and the natural environment with the need for economic growth. Diligent application of technically proven and economically feasible environmental protection measures will be exercised throughout exploration, mining, processing and decommissioning activities to meet the requirements of legislation and to ensure the adoption of best management practices.

To implement this policy, whether in Canada or abroad, the member companies of the Chamber of Mineral Resources of Nova Scotia will:

- assess, plan, construct and operate their facilities and projects in compliance with all application legislation providing for the protection of the environment, employees and the public;
- in the absence of such legislation apply best management practices to advance environmental protection and to minimize environmental risks;
- maintain an active, continuing self-monitoring program to ensure compliance with government and company requirements;
- foster research directed at expanding scientific knowledge of the impact of the industry's activities on the environment;
- work pro-actively with government and the public in the development of equitable, cost-effective and realistic laws for the protection of the environment; and
- enhance communications and understanding with governments, employees and the public.



The Chamber of Mineral Resources of Nova Scotia Environmental Policy

Member companies of the Chamber of Mineral Resources of Nova Scotia are committed to the concept of sustainable development which requires balancing good stewardship in the protection of human health and the natural environment with the need for economic growth. Diligent application of technically proven and economically feasible environmental protection measures will be exercised throughout exploration, mining, processing and decommissioning activities to meet the requirements of legislation and to ensure the adoption of best management practices To implement this policy, whether in Canada or abroad, the member companies of the Chamber of Mineral Resources of Nova Scotia will:

- assess, plan, construct and operate their facilities and projects in compliance with all applicable legislation providing for the protection of the environment, employees and the public;
- in the absence of such legislation apply best management practices to advance environmental protection and to minimize environmental risks;
- maintain an active, continuing self-monitoring program to ensure compliance with government and company requirements;
- foster research directed at expanding scientific knowledge of the impact of the industry's activities on the environment;
- work pro-actively with government and the public in the development of equitable, cost-effective and realistic laws for the protection of the environment; and
- enhance communications and understanding with governments, employees and the public.

_____

hereby agrees with the Chamber of Mineral Resources of Nova Scotia to adhere to the above policy

_____ _____

For the Company For The Chamber of Mineral Resources

_____

Date

The Chamber has been very active in assisting government departments to enact appropriate legislation and policy. The Chamber has participated in the drafting of the new Mineral Resources Act that was recently proclaimed in the province of Nova Scotia, which was a culmination of approximately four years of effort on behalf of Government and the Chamber. It also participated in the formulation of the environmental assessment process in Nova Scotia and is currently working on drafting pit/quarry regulations for Nova Scotia. Discussions have started with the Department of Labour, with respect to mine safety legislation and continue with respect to workers' compensation.

All of these cooperative efforts will ensure that government policies and regulations which are drafted in future will be sensitive to the needs and the concerns facing the mineral industry. Through this consultative process, the industry has had ample opportunity to preview elements of proposed legislation and to tailor legislation to meet both the government's and the industry's needs. Government is thus given some measure of assurance that the proposed legislation will not encounter major objections during the approval process and that the legislation that is subsequently adopted will be accepted more readily in the working place.

The Chamber also participates in other government consultative processes such as the Round Table on the Environment and the Economy and Voluntary Planning. The Chamber maintains direct contact with government departments such as the Departments of Natural Resources, Environment, Industry Trade and Technology, and federal agencies such as ACOA, ECB and EMR. It serves as liaison between the Chamber members and the other provincial mining associations, the Mining Association of Canada, the Prospectors and Developers Association, the Canadian Institute of Mining and most important of all the members of the Chamber.

NOVA SCOTIA: A MINING PROVINCE

The Mineral Resources Sector plays a valuable and irreplaceable role in the growth of Nova Scotia's economy. The industry presently competes successfully in international markets, and is an important part of the global economy. The economic activity which results from mining, mineral exploration and development creates employment, generates investment, creates demand for goods and services and provides revenue for governments. Mining, and the mineral resource sector in general, is part of the lives of many Nova Scotians. In many Nova Scotia communities it is the only industry and the remainder of the businesses and services exist because of exploration or development of a mineral resource.

Mining came very early to Nova Scotia with the French miners being left ashore during the summer months to excavate coal from the headlands on Cape Breton Island. Remnants of those early coal workings are still visible today,and later grew to be the Cape Breton coal mining industry. The first iron mining and refining operations in Canada were started in Londonderry, Colchester Co., to support steel works that were constructed in the New Glasgow area in the mid 1880's. Gypsum operations started at about the same time to produce building materials. First gold rushes in Canada were initiated about 1860 in Tangier and Mooseland, Nova Scotia and substantial gold mining operations were in progress during the next half century.

Nova Scotia presents a number of rather unique mining situations, ranging from the extensive submarine coal mining operations of Cape Breton, former barite and silver operations in the Walton area, pharmaceutical barite refining in Debert, primary tin operations at East Kemptville and even Nova Scotia mineral aggregates used to build highrises in Houston. Many of these operations are sustained in the 1990's and production is reported in the areas of coal, salt, gypsum, base metals, tin, limestone and barite and well as construction materials and aggregates.

In June of 1991, John Mullally, Deputy Minister of Mines and Energy, reported the value of mineral production during 1990 totalled $492 millions from 22 metals, minerals and commodities.The mining industry provided direct employment last year to approximately 5,400 workers.

Cadmium, copper, gold, lead, silver, tin and zinc, had a value of $50 millions. Depressed prices for tin, lead, zinc and gold are having a negative effect on the two base metal mines and gold prospects.The value of industrial minerals produced in 1990 totalled $136 millions. Included are gypsum, anhydrite, salt, limestone, dolomite, cement, barite, peat moss, crushed stone and sand and gravel.Structural materials include building stone, cement, clay products, plaster products, crushed stone, and aggregates. The value of these commodities produced in 1990 was $101 millions.

Exploration expenditures during the past year totalled $10 millions, half of the amount spent during the previous 12 months.

Mr. Mullally cited the main reason for the drop in exploration was a decline in the world price of gold and other metals, as well as the cancellation of the Canadian Exploration Incentive Program. He projected that if prices for most metals improve considerably in the next year or two, we can look forward to improved profitability at existing mines and hopefully an increase in exploration activity.

We believe that Nova Scotia is microcosm of mining in Canada. Nova Scotia mining projects compete for exploration financing and capital project funding. In Nova Scotia we are subjected to the same levels of regulatory controls and due to the limited land areas available for exploration, are probably subjected to a higher level of public scrutiny in the areas of environment and land access. Our producers, particularly gypsum and tin face stiff international competition from cheap third world production, product substitution and synthetic materials from waste streams.

We are proud of our industry and our province and we want to see the continuation and growth of these resource based industries into the future. Viewed in proportion to provincial gross product, the mining industry of Nova Scotia is as important to the economy of Nova Scotia as the Ontario industry is to the economy of Ontario. The Chamber of Mineral Resources exists to encourage and support the entrepreneurial spirit of the private sector by exploring and developing these vital resources and to initiate further growth and investment in a manner sensitive to the needs of Nova Scotians.

ASSOCIATION BRIEFS

We have had the opportunity to preview the submission to the conference prepared by the Mining Association of Canada. We were very pleased to see a restatement that the mining industry contributes significantly to Canada's gross domestic product and that because it is nation wide, the industry has developed a national viewpoint and is a force for Canadian understanding and unity. MAC comments upon the poor public perception of the mining industry in the areas of environment, health and safety, and addresses the level of exploration required to sustain Canada's rank in the world's production of base metals. Aggressive exploration for minerals must be encouraged as well as new technologies found to recover value from lower grade ores and from recycled waste.

The Prospectors and Developers Association are making the point that the development of the rich endowment of mineral resources will enable Canada to maintain its position in world trade, to maintain the standard of living, reduce national debt and pay for social environmental programs. In Nova Scotia we certainly support that point of view and are concerned that negative public statements by senior federal politicians concerning the value of the natural resource industries and their future in Canadas economy. We must express alarm when our government fails to understand the value of the basics. Both of the briefs are of excellent quality and present matters of substance to the industry.

PUBLIC IMAGE OF MINING

The majority of organizations involved in mining in Canada have in recent years promoted enhancement of public image and have prepared communications programs to meet these needs. We would like to add the Chamber's voice to that requirement.

There was a time, not so long ago, that Canadian mineral resource developers were thought of as courageous pioneers, creators of wealth and nation builders. Because of mineral exploration and development activities, vast areas of this land were explored, mapped, accessed, provided with infrastructure, and communication links which became available for other industrial ventures and eventually home to many Canadians. These ambitious and aggressive mineral development projects helped promote Canada to a prominent rank in the world economy.

Canada's strength was solid, real and enduring because it was based on the natural resources of the land and the ingenuity and skills of Canadians to find, develop, utilize, and capitalize on the national assets. Canadians and the world recognized and appreciated the true value of these mineral resource assets.

We fear that it is now becoming shameful to be a miner, to be employed in or to operate an industry that directs its energy to the development of a natural mineral resource. To be a miner is somehow a less noble occupation than fast food, fast retail, service related venture or indeed a leisure related activity. Are we miners missing the point or is the country losing its focus and sense of value?

We are now defending to our children that our industry is party to the destruction of non-renewable resources, pollution in the air, land and waters and is a major contributor to the destruction of the earth and the well being of future generations. The mass of paper, rhetoric and opinion is not in our favour. While we may be deserving of the discredit, largely due to silence or inaction, we do not feel the industry is entirely to blame. Opponents of the industry find that our industry has been an easy, willing target, slow to defend and quick to retire.

The mining industry, as government is beginning to learn, will have to devote more effort to the communication of its messages to the public. The messages will have to stress values, industry strengths, society's needs, social and environmental responsibilities and the need for economic activity to support our standard of living. The various publics are as broad as the above list but should pay particular attention to the youth of the nation. They will be the industry's future employees, managers, markets, investors, regulators, and critics.

We feel that the single most important issue facing the industry today is one of poor image in the mind of the public, frequently accompanied by a lack of credibility of industry spokespersons. If we can begin to successfully address this single issue, we believe that the other concerns such as environmental issues, lack of graduates, land access, development permits, endless red tape and many others will be relieved as well. Of course there is no quick fix, but we must start the process soon if we are to begin to counter the mass of adverse opinion and replace it with appropriate positive messages.

Issues affecting the mining industry have been highlighted by three recent events:

- An Angus Reid Associates poll commissioned by the Mining Industry of Canada in 1989 included the following findings:
  - 65% of the respondents were classified as not pro mining industry.
  - The environment was determined to be the top issue facing Canada.
  - One in five respondents believed that the mining industry harms the environment.
  - 60% of respondents felt that environmental groups were perceived as credible commentators on the mining industry, 35% said government, 34% named executives of mining companies and 44% named industry associations.
- The government's consultation document "A Framework for Discussion on the Environment", the Green Plan, includes the following possible actions that could directly affect mining:
  - Development of regulations under the CEPA to control toxic wastes from metal mines, mills and smelters.
  - Completion of the National Parks System.
  - Stronger enforcement of existing environmental legislation.
  - An Arctic Environmental Strategy.
  - Introduce, across Canada, the requirement that the mining industry post rehabilitation bonds.

- Develop emphasis on the "4 R's" (Reduce, Reuse, Recycle and Recover) in capital and consumer goods to maximize the use of finite non-renewable resources.

- Identify sensitive ecological zones and prohibit development of mining claims until consideration is given to other land use options, such as park designations.

- Utilize public advisory committees to maximize participation of relevant interests in the wise stewardship of land before, during and after mining.

- The publication by MacLean's magazine of a survey of provincial environment practices which rates Nova Scotia lowest in Canada.

PUBLIC AWARENESS PROGRAM

The Chamber has embarked upon a program of public awareness which had the following goals:

- To ensure Nova Scotians are aware of the benefits of mining.

- To ensure a "political" environment, including public opinion, which promotes a healthy mining industry.

- To demonstrate that mining companies are responsible corporate citizens in areas such as environment, health and safety.

- To ensure future land access.

- To promote tolerance and acceptance of mining activity.

- To change opinions and perceptions of the public and politicians.

- To promote a future for mining in Nova Scotia.

- To address the lack of credibility of the mining industry and government.

Publics

There are a number of publics, or audiences to be addressed by the Chamber.

Government

Government politicians and bureaucrats are important from a regulatory and permit aspect, and are also susceptible to pressures from various groups. The message delivered to this group should be one of cooperation and willingness to work out concerns, with the social and economic benefits of the industry being stressed, and noting that the industry is prepared to pay its own way.

Environmental Groups

This group is often seen as opposing legitimate plans and operations. The message to this group is one of concern for the environment, sensitivity, care and prudence, with emphasis on the present and future.

Neighbours

People who live near exploration or development areas are important to this industry as they can supply part of the required labour force. They can also cause government to delay or withhold permits, and limit land access through political pressure if they rally against a project.

Employees

Employees are essential part of the industry's communication plan. The communication objective is to create a spirit and atmosphere consistent with the mission statement and which reinforces the messages being sent to other publics.

The Industry (Chamber Members, Industry Managers, Other Mining Organizations)

This group should receive information on the whole industry and the various initiatives being undertaken by the Chamber. Non members will be made aware of the scope of activity in Nova Scotia.

The Next Generation

Canadian youth are important to the future of the industry. From them will come the next employees, managers and supporters of mining in Nova Scotia. The message to this group will be one of optimism and opportunity.

Suppliers and Other Business

The message to this public is the strength and future prospects of the industry in the province. The overall economic impact of the industry should also be stressed.

The General Public

This audience will get a message designed to enhance its awareness of the industry. There is no strong awareness of the industry across the province, however, ironically enough, what feelings there are tend to be negative. The message to this group is one of the present and the future: a sensitive industry bringing major benefits to the province.

Investors

This group is critical to the industry. It must be shown that all is well in the industry in Nova Scotia. The message is one of good management, growth potential and fiscal responsibility.

Communication Program Elements

The communication program elements designed to achieve the objectives of the strategies consisted of a mission statement, environmental policy, speeches, display materials, exhibits, media interview training, telephone information services and an approach to youth.

Speeches

Chamber members seek opportunities to speak to various groups (i.e. Rotary Clubs, other service clubs, boards of trade, school groups, etc.). Specific messages can be developed for each group, but the underlying theme would come from the mission statement.

Collateral Material

The Chamber is developing a standard information package to be used by any member speaking to a group. Examples would be slides, posters, brochures, video and a portable display. Ore samples are also a useful medium.

Modular Exhibit

A free standing panel exhibit can be used by individual speakers or the entire exhibit can be mounted for major events. Such events could include:

- An annual Open House sponsored by the Department of Natural Resources.
- Trade fairs sponsored by economic development or industrial commissions.
- School career days.
- Open houses hosted by Chamber member firms.
- Speaking engagements.

Media Interview Training

It is recommended that separate media interview and speaker training be sponsored by the Chamber for individual members. Sessions can be as short as one day, at a modest cost per session.

Approach to Youth

A special program designed to attract young people into mining careers, and to make them familiar with the industry, will be developed. It would include school presentations at career days, speaking to youth and school groups and special printed material. This program would complement the existing scholarship offered annually to students studying geology or mining engineering at Nova Scotia universities.

Environmental Policy

The Chamber has adopted an environmental policy which has been communicated to the general public.

Good Corporate Citizenship

The Chamber continues its Mining for Miracles campaign and actively seek out similar opportunities. The results of these campaigns should be publicized. Individual members should be encouraged to participate in local community events, taking advantage of all public relations opportunities.

National Exposure

The Chamber takes advantage of opportunities for exposure on a broader stage, such as meetings which are held across Canada by national trade organizations. Other opportunities are trade shows, seminars and conferences organized by government or industry with participation on panels, provision of speakers and setup of displays at these events.

RECOMMENDATIONS

There is a strong need to **coordinate the public relations activities** of all related organizations. We recommend and support cooperative efforts between PDA, MAC and the Provincial Mining Associations and Chambers of Mines, CIM and Government Agencies.

It is in the interest of both industry and government agencies that are responsible for the mineral resources sector to plan an integrated approach. We need to **form strong and active national linkages** to supercharge the effort. We have a tremendous resource of personnel and energy, stretching from the Atlantic to the Pacific but we need to harness and direct the efforts to get our messages across. Only a critical mass of coordinated voices with a consistent and credible message will be successful in improving our image.

The industry needs to **encourage participation by related industrial interests**, such as the forest industry as a co-user of natural resources requiring access to land areas for the pursuit of their interests, and the manufacturing sector to whom the majority of mineral products are directed. Canada has the economic advantage of both the raw materials and the manufacturing capacity to fashion these raw materials into consumer products for the world. We would be well served to solicit industry associations to assist in the promotion of our ideas, Canadian Manufacturers' Association, Pulp and Paper Group, Community Groups, Chambers of Commerce, Tourist Associations and others.

It is important to be **accepted by the aboriginal groups** and to incorporate their concerns for the prudent use of lands. These groups must see the mineral industry as a provider of jobs, economic stability and worthy of trust to utilize their lands for an interim period of time while the minerals are being extracted prior to a well planned and coordinated restoration program.

We need to work harder to **encourage environmental interest groups to be part of our industry associations**. It is important to incorporate these groups and individuals in our deliberations, so that a spirit of cooperation and achievement can be effected.

Within the industry itself, it is important for us to cooperate and coordinate ventures with each other and to effect some form of **self policing**. Where the members are found to be delinquent in certain areas relative to environmental reclamation, we will have to assume the responsibility of censor and pressure individual members to become more sensitive to these issues.

Review

We wanted to take a few minutes this morning to introduce you to Chamber of Mineral Resources of Nova Scotia and to leave you with the thought that Nova Scotia is indeed a mining province with all the concerns and all of the goals of the mining industry elsewhere in Canada. We have stressed that we feel one of the major issues associated with the mining industry, not only in Nova Scotia, but throughout Canada, is indeed the very poor public image of the industry. The Chamber of Mineral Resources has adopted a plan of action to deal with those concerns which we feel will eventually bring results.

We look forward to working with other groups associated with the Mining Industry of Canada to bring the industry into the 1990's. Future generations of Canadians will again be proudly associated with an industry that forms the basis of a strong economy, provides sustained employment, a promising future and are prudent stewards of the resources, lands and the environment in which we work and live or is it better phrased, must work to survive.

An hour's pay for the IWK



CHAMBER of MINERAL RESOURCES of NOVA SCOTIA

Children's Hospital Telethon

Over the last two years, CMRNS members and their employees have raised over $40,000 for the IWK through the Mining For Miracles Campaign.

Document: 830-399/004

Traduction du Secrétariat

48e CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

Mémoire présenté à la conférence des ministres des mines

Chamber of Mineral Resources of Nova Scotia

HALIFAX (Nouvelle-Écosse)
Du 22 au 24 septembre 1991

VEUILLEZ NOTER

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MÉMOIRE DE LA

CHAMBER OF MINERAL RESOURCES

OF

NOVA SCOTIA

PRÉSENTÉ À LA

CONFÉRENCE DES MINISTRES DES MINES

LE 24 SEPTEMBRE 1991

HALIFAX

(NOUVELLE-ÉCOSSE)

Table des matières

Chamber of Mineral Resources of Nova Scotia	1
La Nouvelle-Écosse : une province minière	4
Mémoires des associations	6
Image de l'industrie minière auprès du public	7
Programme de sensibilisation du public	9
Recommandations	13

Mandat

S'assurer que la Nouvelle-Écosse est reconnue comme une province dotée de ressources minérales de qualité internationale qui justifient des investissements.

Favoriser l'esprit d'entreprise nécessaire à l'exploration et à l'exploitation de gisements miniers.

S'assurer que les orientations gouvernementales établissent un cadre favorable à une industrie minière compétitive au sein d'un marché international.

Poursuivre un programme de communication permanent qui présente l'industrie minière comme une industrie responsable qui est la source d'une prospérité et d'emplois à long terme et qui appuie des attitudes responsables à l'égard des problèmes écologiques et sociaux.

Conseil d'administration
Chamber of Mineral Resources
of Nova Scotia, 1990

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48e CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

HALIFAX (NOUVELLE-ÉCOSSE)

LE 24 SEPTEMBRE 1991

PRÉSENTÉ PAR : John A. Amirault, président, CMRNS

CHAMBER OF MINERAL RESOURCES OF NOVA SCOTIA

La Chamber of Mineral Resources of Nova Scotia a été fondée en 1981 pour promouvoir le développement du secteur des ressources minérales de la Nouvelle-Écosse. Dans ce but, l'organisme reconnaît la nécessité d'un développement méthodique et du respect de l'environnement. Il cherche à présenter aux pouvoirs publics les points de vue de ses membres sur des lois, des règlements et des démarches qui touchent le secteur ainsi qu'à renseigner le public sur les travaux entrepris pour mettre en valeur les ressources minérales de la province.

L'organisme comporte actuellement environ 130 sociétés et personnes qui oeuvrent dans le secteur minier de la Nouvelle-Écosse. À la fin des années 1980, le secteur était à l'origine d'environ 11 000 emplois et avait un rendement de plus d'un demi milliard de dollars.

L'adhésion à l'organisme est volontaire. Le conseil d'administration est élu et le directeur est nommé à tous les ans. Les tâches administratives sont confiées à contrat à l'Association des manufacturiers canadiens. L'organisme est financé par les cotisations des membres et par un contrat annuel du ministère des Ressources naturelles de la Nouvelle-Écosse.

Mandat

Le mandat de l'organisme, approuvé en 1990, résume bien les objectifs visés :

> S'assurer que la Nouvelle-Écosse est reconnue comme une province dotée de ressources minérales de qualité internationale qui justifient des investissements.
>
> Favoriser l'esprit d'entreprise nécessaire à l'exploration et à l'exploitation de gisements miniers.
>
> S'assurer que les orientations gouvernementales établissent un cadre favorable à une industrie minière compétitive au sein d'un marché international.
>
> Poursuivre un programme de communication permanent qui présente l'industrie minière comme une industrie responsable qui est la source d'une prospérité et d'emplois à long terme et qui appuie des attitudes responsables à l'égard des problèmes écologiques et sociaux.

Politique de l'environnement

Conformément aux attitudes actuelles, la Chamber of Mineral Resources of Nova Scotia a également adopté une politique de l'environnement (voir page suivante) semblable à celle adoptée par l'AMC. Nous croyons que cette politique encouragera nos membres à respecter l'environnement et suscitera des attitudes positives au sein de nos membres et du public.

Les sociétés membres s'engagent à adopter le concept du développement durable qui exige d'établir un juste équilibre entre la protection de la santé de l'homme et de l'environnement et la croissance économique. Des mesures de protection de l'environnement, reconnues techniquement et réalisables économiquement, seront appliquées assidûment au cours de l'exploration, de l'exploitation, du traitement et de la fermeture des mines afin de respecter les dispositions législatives et de garantir l'adoption des meilleurs modes de gestion.

Pour appliquer cette politique, au Canada ou à l'étranger, les sociétés membres de la Chamber of Mineral Resources of Nova Scotia doivent :

- évaluer, planifier, construire et exploiter leurs installations conformément aux dispositions législatives qui visent à protéger l'environnement, les employés et le public;
- employer les meilleures méthodes de gestion, en l'absence de lois semblables, pour promouvoir la protection de l'environnement et réduire au minimum les risques pour l'environnement;
- poursuivre un programme dynamique et permanent d'autosurveillance pour s'assurer que les exigences des entreprises et des gouvernements sont respectées;
- encourager la recherche en vue d'accroître les connaissances scientifiques relatives aux répercussions de l'industrie sur l'environnement;
- oeuvrer de façon prévisionnelle avec les gouvernements et le public en vue de la rédaction de lois équitables, rentables et réalistes de protection de l'environnement;
- améliorer la communication et la compréhension avec les gouvernements, les employés et le public.

Chamber of Mineral Resources of Nova Scotia
Politique de l'environnement

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- encourager la recherche en vue d'accroître les connaissances scientifiques relatives aux répercussions de l'industrie sur l'environnement;

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Le susmentionné, membre de la Chamber of Mineral Resources of Nova Scotia, adopte la politique

au nom de Pour la Chamber of Mineral Resources

Date

L'organisme a été très dynamique en aidant les ministères gouvernementaux à promulguer des lois et une politique appropriées. L'organisme a participé à l'élaboration de la nouvelle loi sur les ressources minérales qui a été récemment promulguée par la Nouvelle-Écosse et qui est le fruit d'environ quatre ans d'efforts de la part du gouvernement et de l'organisme. La Chamber of Mineral Resources a également participé à l'élaboration du mécanisme d'évaluation environnementale de la Nouvelle-Écosse et rédige actuellement des règlements sur les carrières pour la province. Des discussions ont été entamées avec le ministère du Travail en vue d'une loi sur la sécurité dans les mines et se poursuivent en ce qui concerne l'indemnisation des travailleurs.

Cette collaboration fera en sorte que les orientations et les règlements gouvernementaux qui seront ultérieurement rédigés tiendront compte des besoins et des craintes de l'industrie minière. À l'aide de ce cheminement consultatif, l'industrie a eu amplement l'occasion d'avoir un aperçu de certains éléments du projet de loi et de le modifier pour qu'il réponde aux besoins du gouvernement et de l'industrie. Le gouvernement reçoit donc une certaine garantie que le projet de loi ne prêtera pas trop le flanc à la critique lors de la démarche d'approbation et que la loi adoptée sera plus facilement acceptée sur les lieux de travail.

La Chamber of Mineral Resources participe à d'autres mécanismes gouvernementaux de consultation comme la Table ronde sur l'environnement et l'économie et la Planification volontaire. Elle entretient des relations directes avec des ministères comme ceux des Ressources naturelles, de l'Environnement, de l'Industrie, du Commerce et de la Technologie, et des organismes fédéraux comme l'APECA, EC et EMR. La Chamber of Mineral Resources sert d'instrument de communication entre ses membres et les autres associations minières provinciales, l'Association minière du Canada, l'Association canadienne des prospecteurs et entrepreneurs, l'Institut canadien des mines.

LA NOUVELLE-ÉCOSSE : UNE PROVINCE MINIÈRE

Le secteur des ressources minérales joue un rôle précieux et irremplaçable dans la croissance de l'économie de la Nouvelle-Écosse. L'industrie connaît actuellement le succès sur les marchés internationaux et constitue un élément important de l'économie mondiale. L'exploration et l'extraction minières engendrent des emplois, favorisent les investissements, créent une demande en biens et services et enrichissent les coffres de l'État. L'exploitation minière, et le secteur des ressources minérales dans son ensemble, font partie de la vie de bon nombre de Néo-Écossais. Dans beaucoup de collectivités néo-écossaises, elle est la seule industrie et le commerce et les services existent grâce à l'exploration ou à la mise en valeur des gisements.

L'exploitation minière en Nouvelle-Écosse ne date pas d'hier, car les mineurs français étaient débarqués en été pour extraire le charbon des promontoires de l'Île du Cap-Breton. Les vestiges de ces premières exploitations sont toujours visibles. Ultérieurement, elles s'intégrèrent à l'industrie charbonnière du Cap-Breton. Les premières mines de fer et les premières installations de raffinage du Canada ont vu le jour à Londonderry, comté de Colchester, pour alimenter les aciéries que l'on construisait dans la région de New Glasgow, vers 1885. L'exploitation du gypse a commencé vers cette époque pour permettre la fabrication des matériaux de construction. Les premières ruées vers l'or au Canada ont eu lieu vers 1860 à Tangier et à Mooseland (Nouvelle-Écosse) et d'importantes exploitations de gisements aurifères ont existé au cours des cinquante années suivantes.

La Nouvelle-Écosse présente un certain nombre de situations minières plutôt uniques : importante exploitation sous-marine du charbon du Cap-Breton, anciennes mines de barytine et d'argent dans la région de Walton, raffinage de la barytine à des fins pharmaceutiques à Debert, exploitation de l'étain primaire à East Kemptville, sans oublier la production d'agrégats minéraux qui sont utilisés dans la construction de gratte-ciel à Houston. Bon nombre de ces exploitations se poursuivent dans les années 1990 et on signale la production de charbon, de sel, de gypse, de métaux communs, d'étain, de calcaire et de barytine ainsi que de matériaux de construction et d'agrégats.

En juin 1991, John Mullally, sous-ministre des Mines et de l'Énergie, a signalé que la production minérale (22 métaux, minéraux et produits) avait atteint 492 millions de dollars en 1990. L'industrie minière a directement employé l'an dernier environ 5 400 travailleurs.

La valeur du cadmium, du cuivre, de l'or, du plomb, de l'argent, de l'étain et du zinc s'est située à 50 millions de dollars. La chute des cours de l'étain, du plomb, du zinc et de l'or a des répercussions négatives sur les deux mines de produits communs et sur les perspectives d'exploitation aurifère. Les minéraux industriels exploités en 1990, dont le gypse, l'anhydrite, le sel, le calcaire, la dolomie, le ciment, la barytine, les sphaignes, la pierre concassée, le sable et le gravier, ont atteint une valeur de 136 millions de dollars. Parmi les matériaux de construction, on compte la pierre à bâtir, le ciment, les produits céramiques, les plâtres, la pierre concassée et les agrégats. La valeur de cette production a atteint 101 millions de dollars en 1990.

Au cours de l'année dernière, les dépenses d'exploration ont totalisé 10 millions de dollars, soit la moitié du montant engagé au cours des douze mois précédents.

M. Mullally estime que la raison principale de cette baisse de l'exploration est la chute des cours mondiaux de l'or et d'autres métaux ainsi que la suppression du Programme de stimulation de l'exploration minière au Canada. Il prévoit que si les cours de la plupart des métaux augmentent considérablement au cours des deux prochaines années, on peut s'attendre à un rendement supérieur pour les mines en exploitation et peut-être à une hausse de l'exploration.

Nous croyons que la Nouvelle-Écosse est un microcosme de l'exploitation minière au Canada. Les projets miniers dans la province se font concurrence pour les fonds d'exploration et les subventions en immobilisations. En Nouvelle-Écosse, nous sommes assujettis aux mêmes règlements et, en raison de la faible superficie qui peut être consacrée à l'exploration, nous sommes probablement soumis à un examen plus serré de la part des gouvernements en matière d'environnement et d'accès aux terrains. Nos producteurs, notamment ceux de gypse et d'étain, font face à une concurrence internationale vive en raison des produits à bon marché provenant du Tiers-monde, du remplacement des produits et des matériaux synthétiques issus du flux des déchets.

Nous sommes fiers de notre industrie et de notre province et nous voulons que cette industrie des ressources continue de croître. Comparativement au produit provincial brut, l'industrie minière de la Nouvelle-Écosse est aussi importante pour l'économie de la province que l'est l'industrie ontarienne en Ontario. La Chamber of Mineral Resources a pour vocation de favoriser et d'appuyer l'esprit d'entreprise du secteur privé grâce à l'exploration et à l'exploitation de ces ressources cruciales ainsi que d'encourager une croissance et des investissements en fonction des besoins des Néo-Écossais.

MÉMOIRES DES ASSOCIATIONS

Nous avons eu l'occasion d'avoir un aperçu du mémoire présenté par l'Association minière du Canada. Nous avons été très contents de constater que l'Association a réitéré que l'industrie minière contribue considérablement au produit intérieur brut du Canada et qu'en raison de son caractère national, l'industrie a acquis un point de vue national et représente une force pour l'unité et la compréhension au pays. L'AMC a exprimé ses observations sur la faible image de l'industrie minière auprès du public dans les domaines de l'environnement, de la santé et de la sécurité et traite de la question de l'exploration nécessaire pour que le Canada conserve son rang de producteur mondial de métaux communs. On doit encourager une recherche dynamique de nouveaux gisements et de nouvelles techniques doivent être mises au point pour récupérer la valeur des minerais pauvres et des produits recyclés.

L'Association canadienne des prospecteurs et entrepreneurs signale que la mise en valeur des richesses minérales permettra au Canada de conserver sa place au sein des marchés internationaux, de maintenir le niveau de vie, de réduire la dette nationale et de consacrer des fonds aux programmes environnementaux et sociaux. En Nouvelle-Écosse, nous appuyons certes ce point de vue et nous sommes alarmés des déclarations publiques négatives d'hommes politiques fédéraux sur la valeur des industries des ressources naturelles et leur avenir au sein de l'économie canadienne. Nous devons donner l'alarme lorsque notre gouvernement ne comprend pas la valeur des facteurs fondamentaux. Les deux mémoires sont d'une excellence facture et présentent des sujets de préoccupation de l'industrie.

IMAGE DE L'INDUSTRIE MINIÈRE AUPRÈS DU PUBLIC

La majeure partie des organismes d'exploitation minière au Canada ont encouragé au cours des dernières années une amélioration de l'image publique et ont élaboré des programmes de communication pour répondre à ce besoin. Nous aimerions faire part du point de vue de la Chamber of Mineral Resources à ce sujet.

Il fut une époque, peu éloignée, où les exploitants canadiens des ressources minérales étaient considérés comme des pionniers courageux, des promoteurs de la prospérité et des pères du pays. Grâce à l'exploration et à l'exploitation minières, de vastes territoires ont été explorés, cartographiés, ouverts et dotés d'une infrastructure et de liens de communication qui ont été mis à la disposition d'autres projets industriels et qui ont été finalement habités par beaucoup de Canadiens. Ces projets miniers ambitieux et dynamiques ont contribué à propulser le Canada à une position importante au sein de l'économie mondiale.

La puissance du Canada était solide, réelle et durable, car elle reposait sur les ressources naturelles du pays et sur l'ingéniosité et la compétence déployées par des Canadiens pour découvrir, exploiter et tirer profit d'un patrimoine national. Les Canadiens et le monde entier reconnaissaient et appréciaient la valeur réelle de ce patrimoine minéral.

Nous craignons qu'il devient honteux d'être un mineur, de travailler dans une industrie qui consacre son énergie à l'exploitation d'une ressource minérale naturelle. Le métier de mineur est en quelque sorte moins noble qu'un métier dans la restauration-minute, dans le commerce au détail, dans les services ou même dans les loisirs. Sommes-nous obtus ou le pays perd-il son sens des valeurs et son centre d'intérêt?

Nous affirmons maintenant à nos enfants que notre industrie contribue à la destruction des ressources naturelles, à la pollution de l'air, des sols et de l'eau, qu'elle dégrade fortement la Terre et menace le bien-être des générations futures. Le volume de documents, d'opinions et de discours ne joue pas en notre faveur. Bien qu'il soit possible que nous méritions ce blâme, dû en grande mesure au silence et à l'inaction, nous ne croyons pas que l'industrie est responsable de tous les maux. Les détracteurs de l'industrie trouvent que nous avons été une cible facile et bien disposée, lente à la détente et rapide à battre en retraite.

L'industrie minière devra consacrer plus d'énergie, comme les gouvernements commencent à l'apprendre, pour transmettre ses messages au public. Ceux-ci devront mettre l'accent sur les valeurs, les points forts de l'industrie, les besoins de la société, les responsabilités environnementales et sociales, et l'appui nécessaire de l'activité économique pour garantir notre niveau de vie. L'éventail de publics est aussi vaste que la liste précitée, mais il convient d'accorder une attention particulière aux jeunes. Ce sont eux qui seront les futurs employés, cadres, investisseurs, législateurs et critiques de l'industrie.

Nous estimons que le principal problème que doit régler aujourd'hui l'industrie est sa mauvaise image au yeux du public, souvent accompagnée d'un manque de crédibilité des porte-parole de l'industrie. Si nous pouvons commencer à régler ce seul problème, nous croyons que les autres sources de préoccupation comme l'environnement, le manque de diplômés, l'accès aux terres, les permis d'exploitation, l'interminable paperasserie, etc. seront également atténuées. Certes, il n'existe aucune solution rapide. Nous devons amorcer le processus bientôt si nous voulons contrecarrer l'opinion négative et la remplacer par des messages positifs appropriés.

Trois événements récents ont souligné les problèmes qui touchent l'industrie minière :

. Un sondage mené en 1989 par la société Angus Reid à la demande de l'industrie minière du Canada a donné des résultats, notamment :

  - 65 % des répondants ne sont pas des partisans de l'industrie minière;

  - l'environnement est la principale source de préoccupation au Canada;

  - 20 % des répondants estiment que l'industrie minière nuit à l'environnement;

- 60 % des répondants croient que les groupes écologistes sont des critiques crédibles de l'industrie minière alors que 35 % précisaient que c'est le gouvernement, 34 % les cadres des sociétés minières et 44 % les associations industrielles.

. Le document de consultation du gouvernement intitulé L'Environnement à l'heure de la concertation - Le plan vert comporte les mesures suivantes qui pourraient nuire directement à l'exploitation minière :

- la rédaction de règlements pour la LCPE afin de lutter contre les déchets toxiques des mines métalliques, des usines et des fonderies;

- le parachèvement du réseau de parcs nationaux;

- une application plus sévère de la loi sur l'environnement en vigueur;

- une stratégie de l'environnement arctique;

- l'exigence au Canada que l'industrie minière affiche des garanties de remise en état des mines;

- favoriser les 4 "R" (réduction, réutilisation, recyclage et récupération) pour les capitaux et les biens de consommation afin de maximiser l'emploi de ressources non renouvelables;

- cerner les aires écologiques sensibles et interdire les revendications de terrains miniers jusqu'à ce qu'on ait pris en considération d'autres possibilités d'aménagement comme la création de parcs;

- avoir recours aux comités consultatifs publics pour maximiser la participation des groupes d'intérêt pertinents à une gestion intelligente des terres avant, pendant et après l'exploitation minière.

. La publication par le magazine MacLean's d'une étude sur les méthodes provinciales de protection de l'environnement : la Nouvelle-Écosse arrive bon dernière au Canada.

PROGRAMME DE SENSIBILISATION DU PUBLIC

La Chamber of Mineral Resources s'est lancée dans un programme de sensibilisation du public pour atteindre les objectifs suivants :

. s'assurer que les Néo-Écossais sont conscients des avantages de l'exploitation minière;

- garantir un milieu "politique", y compris une opinion publique, qui appuie une industrie minière prospère;
- démontrer que les sociétés minières sont des organismes responsables dans des domaines comme l'environnement, la santé et la sécurité;
- garantir un accès ultérieur à des terres;
- promouvoir la tolérance et l'acceptation des activités minières;
- modifier les opinions et les idées du public et des hommes politiques;
- promouvoir un avenir pour l'exploitation minière en Nouvelle-Écosse;
- régler le problème du manque de crédibilité de l'industrie minière et du gouvernement.

Publics

La Chamber of Mineral Resources doit s'adresser à un certain nombre de publics.

Gouvernement

Les hommes politiques et les bureaucrates sont importants en raison de leurs liens avec les règlements et les permis et également parce qu'ils peuvent être l'objet de pressions de la part de divers groupes. Le message que l'on doit leur transmettre doit être fondé sur la collaboration et la volonté de régler les problèmes, en soulignant les avantages sociaux et économiques de l'industrie et en précisant que celle-ci est prête à débourser.

Groupes écologistes

Ces groupes s'opposent souvent à des plans et à des exploitations légitimes. On doit leur faire savoir que l'on se préoccupe de l'environnement d'aujourd'hui et de demain.

Voisins

Les personnes qui habitent à proximité des lieux d'exploration ou d'exploitation sont importants pour l'industrie, car ce sont eux qui forment une partie de la main-d'oeuvre nécessaire. Ils peuvent également forcer le gouvernement à reporter ou à refuser l'octroi de permis et limiter l'accès à des terres grâce à des pressions politiques s'ils se mobilisent contre un projet.

Employés

Les employés sont un élément essentiel du plan de communication de l'industrie dont l'objectif consiste à créer un esprit et une ambiance conformes au mandat et à renforcer les messages transmis aux autres publics.

Industrie (membres de la Chamber, gestionnaires, autres organismes miniers)

Les membres de ce groupe doivent recevoir des renseignements sur l'industrie dans son ensemble et sur les diverses mesures prises par la Chamber of Mineral Resources. Les organismes non membres seront tenus au courant des activités en Nouvelle-Écosse.

Prochaine génération

La jeunesse canadienne est importante pour l'avenir de l'industrie. C'est parmi eux que l'on recrutera les employés, les cadres et les partisans de l'avenir en Nouvelle-Écosse. Il faut un message d'optimisme et de possibilités.

Fournisseurs, etc.

Il faut transmettre les solides possibilités de l'industrie dans la province. On doit aussi mettre l'accent sur l'incidence économique générale de l'industrie.

Grand public

Le grand public recevra un message destiné à agrandir le champ de ses connaissances sur l'industrie, car ces connaissances ne sont pas très poussées dans la province. Lorsque c'est le cas, elles sont plutôt négatives. Le message doit être le suivant : une industrie sensible aux problèmes de l'heure et qui présente beaucoup d'avantages pour la province.

Investisseurs

Il s'agit d'un groupe crucial pour l'industrie. On doit leur montrer que tout va bien en Nouvelle-Écosse. Le message doit être le suivant : bonne gestion, possibilités de croissance et responsabilité fiscale.

Éléments du programme de communication

Le programme de communication comporte des éléments conçus pour atteindre les objectifs des stratégies. Ce sont : un mandat, une politique de l'environnement, des discours, des expositions, des documents, une formation en prévision d'entrevues avec les médias, des services de renseignements téléphoniques et une démarche auprès des jeunes.

Discours

Les membres de la Chamber of Mineral Resources cherchent des occasions de s'adresser à divers groupes (comme le club Rotary, d'autres clubs, des chambres de commerce, des groupes scolaires, etc.). Des messages précis peuvent être préparés pour chaque groupe. Le thème général doit toutefois s'inspirer du mandat.

Documents accessoires

La Chamber prépare une trousse de renseignements qu'un conférencier pourra utiliser. Le trousse pourrait comporter des diapositives, des affiches, des brochures, un vidéo et un étalage portatif. Des échantillons de minerais pourraient être aussi utiles.

Exposition modulaire

Les conférenciers peuvent utiliser des panneaux ou l'ensemble de l'exposition peut être montée pour des événements importants dont entre autres :

- un événement annuel "portes ouvertes" parrainé par le ministère des Ressources naturelles;
- des salons du commerce parrainés par des commissions industrielles ou du développement économique;
- des journées d'orientation pour les carrières;
- des événements "portes ouvertes" organisés par des sociétés membres de la Chamber;
- des conférences prévues.

Formation en prévision d'entrevues avec les médias

On recommande que la Chamber of Mineral Resources parraine une formation semblable pour ses membres. Les séances peuvent être d'un jour seulement à un coût modique.

Démarche auprès des jeunes

On élaborera un programme particulier conçu pour encourager les jeunes à choisir une carrière dans l'industrie minière et pour les familiariser avec celle-ci. On prévoit des conférences à des jeunes et à des groupes d'écoliers ainsi que des documents conçus à cette fin. Le programme se greffera au programme de bourses offertes annuellement aux étudiants en géologie ou en génie minier des universités néo-écossaises.

Politique de l'environnement

La Chamber of Mineral Resources a adopté une politique de l'environnement qui a été rendue publique.

Responsabilités sociales

La Chamber of Mineral Resources poursuit sa campagne intitulée "Mining for Miracles" et cherche à participer à des événements semblables. Les résultats de ces campagnes doivent être rendus publics. On doit encourager les membres à participer à des événements communautaires locaux et à tirer profit de toutes les possibilités de relations publiques.

Présence nationale

La Chamber of Mineral Resources profite des occasions de signaler son existence au-delà des frontières provinciales, comme à l'occasion de réunions commerciales qui se tiennent partout au pays. Il y a aussi les foires commerciales, les séminaires et les conférences organisés par les gouvernements ou l'industrie. Dans le cadre de ces événements, on participe à des comités, on prononce des allocutions et on monte des kiosques.

RECOMMANDATIONS

Il importe vivement de **coordonner les relations publiques** de tous les organismes connexes. Nous appuyons les mesures de collaboration entre l'ACPE, l'AMC, les associations minières provinciales, la Chamber of Mines, l'ICMM et les organismes gouvernementaux.

Il est dans l'intérêt de l'industrie et du gouvernement, qui sont responsables du secteur des ressources minérales, de planifier une démarche intégrée. Nous devons **former des liens nationaux solides et dynamiques** pour stimuler les efforts. Nous possédons des ressources humaines et de l'énergie en quantité considérable d'une mer à l'autre, mais nous devons exploiter et orienter les efforts pour transmettre nos messages. Ce n'est que d'une seule voix coordonnée qui transmettra un message crédible et permanent que nous réussiront à améliorer notre image.

L'industrie a besoin d'**encourager la participation d'intérêts industriels connexes**, comme l'industrie forestière qui, pour exploiter la ressource ligneuse, doit avoir accès aux terres et le secteur manufacturier qui achète la majeure partie des produits minéraux. Le Canada a l'avantage économique de posséder les matières premières et les fabricants pour transformer ces matières en biens de consommation pour le monde entier. Nous aurions avantage à solliciter l'aide des associations industrielles, telles que l'Association des manufacturiers canadiens, le groupe des pâtes et papiers, les groupes communautaires, les chambres de commerce, les associations touristiques, etc., pour promouvoir

nos idées.

Il est important d'être **accepté par les autochtones** et de tenir compte de leurs préoccupations pour l'aménagement éclairé des terres. Ces groupes doivent considérer l'industrie minière comme une source d'emplois, de stabilité économique et de confiance pendant qu'elle exploite temporairement leurs terres et avant l'entrée en vigueur d'un programme de remise en état bien coordonné et planifié.

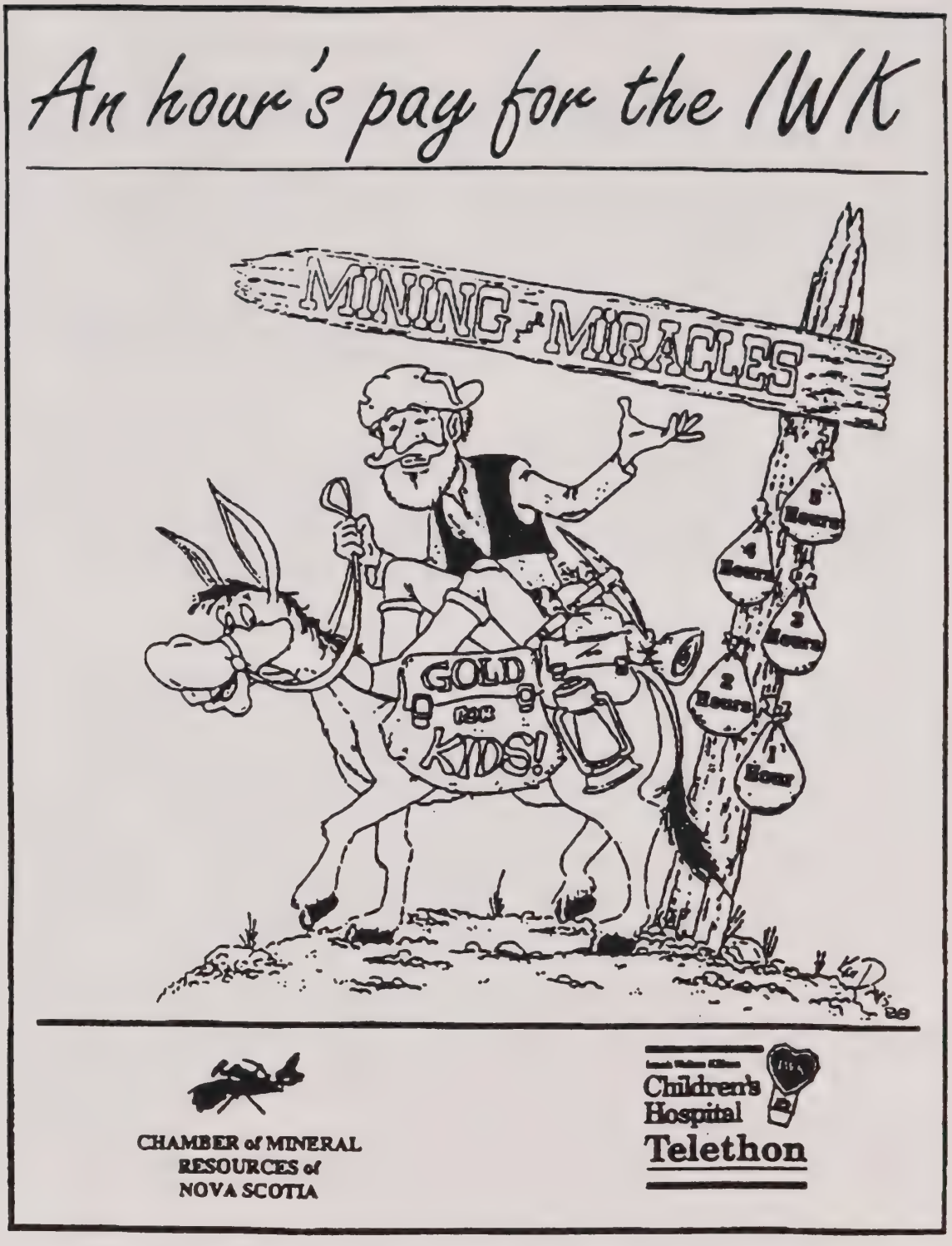
Nous devons redoubler d'efforts pour **encourager les groupes écologistes à se joindre à nos associations industrielles.** Il est important de recueillir leur collaboration pour réaliser des projets.

Au sein même de l'industrie, il est essentiel de collaborer, de coordonner les entreprises et d'adopter une certaine forme d'**auto-réglementation.** Lorsque l'on reconnaîtra que des membres sont fautifs dans certaines régions en matière de réhabilitation du milieu, nous devrons jouer le rôle de censeur et exercer des pressions sur ces membres pour qu'ils modifient leur attitude.

Rappel

Nous voulions accaparer quelques minutes de la matinée pour vous présenter la Chamber of Mineral Resources of Nova Scotia et pour vous faire savoir que la Nouvelle-Écosse est vraiment une province minière dont l'industrie partage tous les objectifs et toutes les préoccupations des industries minières ailleurs au Canada. Nous avons souligné que nous estimons que l'un des principaux problèmes de l'industrie minière, et pas seulement en Nouvelle-Écosse mais partout au Canada, est son image négative. La Chamber of Mineral Resources a adopté un plan d'action pour régler ce problème et nous sommes persuadés que nous obtiendrons finalement des résultats encourageants.

Il nous tarde de collaborer avec d'autres groupes liés à l'industrie minière canadienne pour faire passer l'industrie dans la nouvelle décennie. Les générations futures de Canadiens seront une fois de plus fiers d'être rattachés à une industrie qui est à la base d'une économie saine, qui fournit des emplois permanents, qui offre un avenir prometteur et qui aménage prudemment les ressources, les terres et l'environnement dans lequel nous travaillons et vivons ou qui garantira notre survie.



Au cours des deux dernières années, les membres et les employés de la CMRNS ont recueillis plus de 40 000 dollars pour l'IWK grâce à la campagne "Mining for Miracles".

Document: 830-3990

48TH ANNUAL MINES MINISTERS' CONFERENCE

Canada's Coal Industry
It's Importance to the Nation

The Coal Association of Canada

HALIFAX, Nova Scotia
September 22-24, 1991

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CANADA'S
COAL INDUSTRY
ITS IMPORTANCE TO THE NATION

Presented by
The COAL ASSOCIATION OF CANADA

to the

48th ANNUAL MINES MINISTER'S CONFERENCE

HALIFAX, NOVA SCOTIA

September 24, 1991

Suite 502, 205 Ninth Avenue SE, Calgary, Alberta T2G 0R3 Telephone: (403) 262-1544, Fax: (403) 265-7604

THE IMPORTANCE OF THE COAL INDUSTRY TO CANADA

The Coal Association of Canada welcomes this opportunity to present a brief to the Mines Ministers of Canada. The Association membership encompasses most of the major producers of coal (approximately 95% of all coal produced in Canada), 5 coal using utilities and the two major railroads.

We would like to compliment George Miller and his staff at the Mining Association of Canada for the excellent and comprehensive briefing which they prepared for you. Much of what is contained in the brief is germane to the coal industry and has our full support. We commend it to your attention.

We would like to address not just the current importance of the coal sector to the national economy, but also the key challenges facing our industry, the provinces and Canada to ensure that coal will continue to be important in Canada and will match the vision of The Coal Association of "A world which recognizes coal as the vital energy source because it is abundant, safe, reliable, economic and environmentally acceptable".

To do this we would like to share with you the results of two studies (one recently published, one soon to be). These studies present, respectively:

1. The importance of the resource industries as drivers of the economy; and
2. A detailed analysis of the contribution that the coal industry makes to the regional and national economies.

We will then comment on some key policy issues which are all interlinked, but which must be resolved for our industry to fulfill its vision an to maintain its role in the support of the economy.

RESOURCE INDUSTRIES AS DRIVERS OF THE ECONOMY

The first study, which was produced in March 1991 for the B. C. Round Table on The Environment and Economy by the B. C. Ministry of Finance and Corporate Relations is entitled "The Structure of the British Columbia Economy: A Land Use Perspective".

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This in-depth analysis of inter industry linkages demonstrates that exports by the natural resources sector (including coal and other minerals) generated over 23 per cent of provincial jobs, and that 71 per cent of all jobs created by exports were generated by natural resource exports.

The major conclusion was that, contrary to expectations from traditional analyses, the natural resources sector is a major driver of the economy with significant employment effects on other sectors.

One might expect that, outside of the industrial centres of Ontario and Quebec, a similar analysis would uncover the same patterns.

THE ECONOMIC IMPACT OF THE COAL INDUSTRY IN CANADA

The Canadian Energy Research Institute will shortly publish a report on "Coal in Canada" which reviews the history and current status of Canada's coal industry, together with the critical role played by the coal industry in the operation of Canada's rail and port facilities. The study assesses the coal industry's linkages with other sectors of the Canadian economy and its impacts on employment and value added across Canada.

Aside from the direct and indirect impacts related to mine, rail and port transportation, the indirect impacts associated with linkages forward of coal production and delivery (e.g., electric power and steel making) were not estimated in this study due to data limitations. As coal fired power generation is important in Saskatchewan, Ontario, Alberta and Nova Scotia and for steel making in Nova Scotia and Ontario, the conclusion must be that these employment and income effects are also significant.

With CERI's permission, we have drawn extensively from his report to outline the key conclusions.

> On the most conservative estimates, Canada has about 6.5 billion tonnes of proven recoverable reserves of coal--about 100 years of supply at current Canadian production levels. By comparison, at current consumption levels, Canadian reserve life indices for conventional crude oil and natural gas are only 13 years and 27 years, respectively. Other estimates by the BC government and the Energy

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Resources Conservation Board of Alberta place the reserve life index of coal at anywhere between 500 and 700 years. Clearly, Canadian coal is capable of supplying a greater share of both domestic and export market energy demand in the future.

Coal is Canada's second most important source of electric power generation after hydro and is particularly important for electricity production in Alberta, Saskatchewan, Nova Scotia and Ontario.

Arguably one of the most important links between Canada's coal industry and the domestic economy is transportation, since the competitiveness of Canadian coal is largely determined by the cost and efficiency of transporting coal long distances to domestic and export markets. Coal shipments have a major impact on revenue generated and employment created for many of Canada's ports and railways. Coal moved by Canadian railways and loaded at Canadian ports created an estimated 6,720 jobs nationwide in 1989.

The growth in international demand for Canadian coal has been a major contributing factor in improvements to the capacity and efficiency of Canada's bulk transportation infrastructure. In fact, coal is the single largest bulk commodity being moved by Canadian railroads. These improvements benefit the Canadian economy as a whole by allowing many of Canada's other leading commodities to be more competitive in export markets. Indeed, any significant reduction in coal shipments would impact negatively on the cost of shipping other goods, to the detriment of Canada's competitiveness.

Coal in the Canadian Economy

Canada's coal industry plays an important role in our economy, not only by supplying low cost fuel for domestic generation of electricity and a commodity for export, but also by creating demand for inputs, such as: steel through purchases of mining equipment; man-hours for which it pays wages to a skilled labour force; and the purchase and use of related goods and services.

Employment Impact

In 1989, the total number of employees involved in Canadian coal mining activity was 11,239 representing about 10 per cent of total employment in Canadian mineral industry activity. While coal production has a broad-based impact on many

.../3

industries in Canada, the majority of the impact is felt in industries such as wholesale and retail trade, the business service industries and rail transportation and related services.

Across Canada, employment generated from production and transportation of Canadian coal in 1989 totalled 33,000 to 35,000. That is, every job in the Canadian coal mining industry generates an additional 2 jobs in the Canadian economy.

Moreover, this estimate understates coal-related employment somewhat as it does not include coal-related employment in Canadian consulting firms, or those employed by the government in coal policy, research and development.
Regionally the effects are:

British Columbia	13,800 person years
Alberta	6,400 person years
Saskatchewan	1,320 person years
Nova Scotia	7,600 person years
New Brunswick	530 person years
Coal Transportation	6,700 person years

Income Effects

Canada's coal industry generated $1.2 billion of direct value-added income throughout the Canadian economy in 1989. Including the indirect value-added income in industries that support the production of Canadian coal together with induced income generated, the total value-added to the Canadian economy was $2.8 billion. Outside of the producing provinces, Ontario and Quebec's manufacturing industries were the prime beneficiaries of Canadian coal production.

Personal income generated in rail and port activities associated with coal movements adds another $1.29 billion to these figures, placing total value-added income from Canadian coal production and transportation at $3.2 billion in 1989. That is, for every million dollars of value-added income generated by Canada's coal industry, another $1.7 million is created in the Canadian economy.

ENVIRONMENTAL POLICY ISSUES

- Environmental Assessment Legislation

The Canadian Coal Industry is extremely proud of its environmental record and of its ongoing commitment to applying new and innovative methods of environmental protection. Indeed, the Alberta Minister of the Environment, Mr. Ralph Klein, recently stated that: "The coal industry represents the best environmental policy in the country." and "Industries in Alberta that today are complaining that the province's environmental standards are too tough are, in fact, only being asked to meet the standards cooperatively developed between coal producers and the government in 1974."

We feel that these comments are equally valid for the coal industry in other provinces.

However, we, and other natural resource industries are currently faced with a much more interventionist and duplicative federal environmental review process than heretofore.

While the industry recognizes that public servants are operating in good faith, the climate created by decisions on projects such as Rafferty-Alameda and Oldman has caused some officials to apply the existing regulations differently than in previous similar circumstances.

The industry is deeply concerned that, in absence of an appropriate legislative structure, federal officials are operating in an inconsistent fashion within a framework which was never designed to accommodate the provincial processes and projects already in place. This duplication causes significant project delays which severely limit some of our members' abilities to meet their sales contract commitments. The end result is a needless reduction in competitiveness which could, in the long run, only benefit other non-Canadian supplies of coal.

We would urge that the federal Fisheries and Environmental officials be requested to operate in the same cooperative and sensitive fashion they have in the past while they await new legislative and regulatory framework, and to avoid duplicating provincial responsibilities.

With the introduction of the Environmental Assessment Act (C-13) the Federal Government has an opportunity to ensure new legislation is sensitive to provincial and

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industry concerns. The need for industry/provincial consultation and the requirement for clear, time-sensitive, consistent environmental assessment legislation that avoids jurisdictional duplication cannot be overstressed if the industry is to remain competitive.

- **Air Quality Agreements and Global Warming**

The coal industry supports initiatives aimed at reducing harmful emissions, with due regard to local environmental requirements and economics, and would like to work cooperatively to ensure that the Canadian coal industry continues to make a significant contribution to this objective.

However, recent continental and international agreements on atmospheric quality standards have been negotiated by the Federal government with only a minimum of consultation or input from industry and the Provincial Governments. This has resulted in industry and the provinces being forced to play catchup in meeting sometimes arbitrary standards with no clear understanding of the costs, other than that they will impact negatively on our already dismal profitability and may needlessly impede the development of the coal producing provinces.

This must not happen again. The Coal Association trusts that any future initiatives will involve a much more substantial consultative process before the fact.

Insofar as global warming is concerned, the industry recognizes the pressure on the Canadian government to participate in the UN Conference on Environment and Development in Brazil next June, and to be seen as a country with environmental sensitivity.

However, there is still a significant debate amongst scientists as to the reality and causes and potential impact of the phenomenon known as global warming. The major emphasis of governments at this point should be on establishing their own independent analysis of scientific data available while putting in place precautionary measures, which make sense in their own right while reducing greenhouse gases.

If action is indeed proven to be warranted based on scientific data the full economic consequences of various policy options should be explored <u>before</u> specific targets are proposed or agreed to.

Innovative action such as transferring existing Canadian expertise in order to assist Eastern Europe and China in reducing greenhouse and acid gas emissions and in improving their mining processes should be pursued. A program of this nature initiated by governments, supported by the coal industry and engineering firms in Canada, could do more to reduce environmental damage on a global basis that any domestic action which might be initiated. Similarly, the pursuit of improved efficiency in coal should continue through support of innovative new approaches to research, development and demonstration of advanced clean coal technologies.

This kind of approach is also consistent with the Federal Government competitiveness agenda.

ECONOMIC AND TAX ISSUES

- Monetary Policy

As pointed out earlier, the industry is an economic mainstay in many regions of the country, supporting numerous service industries and providing much-needed export revenues. No public policy issue is more important to the long-term viability of the coal industry's ability to continue this support than monetary policy, particularly in the area of exports.

Since the majority of our exports are denominated in US funds, the results of federal monetary policy continue to strangle the export coal industry. Since 1988, the overvalued Canadian dollar has produced revenue losses well in excess of 200 million dollars - which is unavailable for debt reduction and re-investment. Domestically the cost of borrowing in Canada, while it is declining towards acceptable levels, still remains onerous to an industry which is heavily leveraged and in need of significant investments in technology in order to continue to lead the world in environmentally responsible coal extraction, production and reclamation.

The coal industry understands that this issue is largely a result of international forces, but governments have to recognize that the major contribution that the mining industry makes towards the national economy cannot be maintained indefinitely under present monetary policy.

- **Barriers to Trade - International**

The Canadian coal industry, like most international commodity traders, is a price taker. The fact that there is substantial coal production being subsidized by national governments in Japan, Germany, Spain and the United Kingdom causes market distortions which depress the price that can be obtained in the open market. For example, German coal subsidies in 1987 were more than four times Canada's total coal export revenues or $64.50 US per ton.

Removal of these subsidies is essential so that efficient producers such as Canada and Australia can supply high quality coal at realistic prices.

There are some encouraging signs that these subsidies will be phased out. We encourage Canadian and provincial governments to maintain an ongoing dialogue with their foreign counterparts to restore rationality in international coal markets.

- **Barriers to Trade - National**

The Coal Association is encouraged by the commitment of the Federal government to review the inter-provincial trade barriers. We urge that the issue of provincial and federal taxes on diesel fuels used in mining and rail transportation be considered in relation to the competitive position of the Canadian industry versus the US coal producers with whom we must compete in central Canada and in the Pacific Rim. To illustrate the wide discrepancy in taxes between Canadian and US shippers, and between the provinces, we have appended some data which may prove useful.

- **Conclusion**

The Canadian coal industry has played, and continues to play, an important role in the generation of wealth and employment in this country. Increased finding costs in mature oil-bearing sedimentary basins, recent conflicts in the Persian Gulf, the rapidly growing energy demand of the developing nations, and development of new clean coal technologies all point to greater demands for coal for the future. Coal is Canada's long-term economic energy source that will keep Canada competitive in the world markets.

The Canadian coal industry is committed to the continued reduction of environmental impacts associated with the production, processing, transportation and combustion of coal in Canada. **While it is important that Canada's coal mining industry and coal consumers alike ensure that coal is produced, transported and consumed with minimal impact on the environment, it is also important that regulatory initiatives consider the regional and national importance of Canada's coal industry and the implications for the Canadian economy of various regulatory actions.** Because the coal mining industry is closely linked to other sectors of the Canadian economy, government policies which affect the Canadian coal industry will, in turn, impact on many other industries and sectors of the Canadian economy.

APPENDIX #1

to

The COAL ASSOCIATION OF CANADA'S BRIEF

to

The 48th MINES MINISTERS CONFERENCE

HALIFAX, NOVA SCOTIA

September 24th 1991

FEDERAL AND PROVINCIAL FUEL TAX RATES

RAIL VS TRUCK

(cents / litre)

PROVINCE	FEDERAL EXCISE TAX (RAIL & TRUCK)	FUEL TAX RATE FOR RAILWAY	FUEL TAX RATE FOR TRUCK	RAILWAY TAX VS TRUCK TAX
B.C.	4.00	3.42	11.44	(8.02)
ALTA.	4.00	7.00	7.00	0
SASK.	4.00	15.00	10.00	5.00
MAN.	4.00	13.60	9.90	3.70
ONT.	4.00	3.40	10.90	(7.50)
QUE.	4.00	3.00	12.45	(9.45)

NOTES: 1) Tax rates current at January 1, 1991

2) As of January 1, 1991 the Federal Sales Tax on fuel has been replaced by the 7% GST. The GST paid on fuel is not shown on ;this table as it will be recovered through input tax credits.

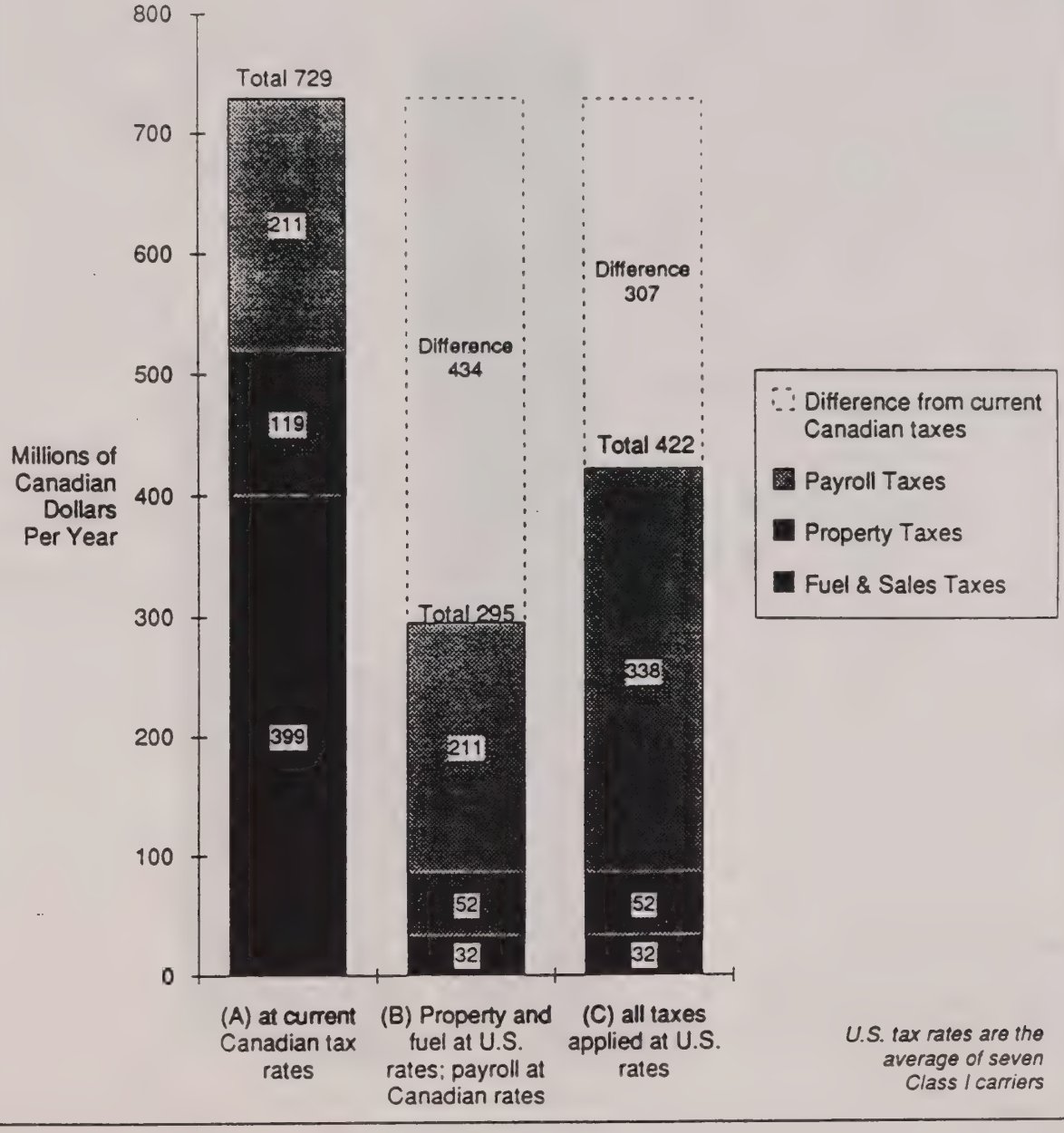
CP RAIL PROPERTY TAXES

1990

PROVINCE	TAX PAYMENT ($ MILLION)	CP RAIL TOTAL TRACK INFRASTRUCTURE (MILES)	AVG. TAXES PER TRACK MILE ($/MILE)
B.C.	20.2	2,048	9,863
ALTA	3.9	2,899	1,345
SASK.	3.4	4,253	799
MAN.	5.3	1,936	2,738
TOTAL FOR HHS (excl. Ontario)	32.8		

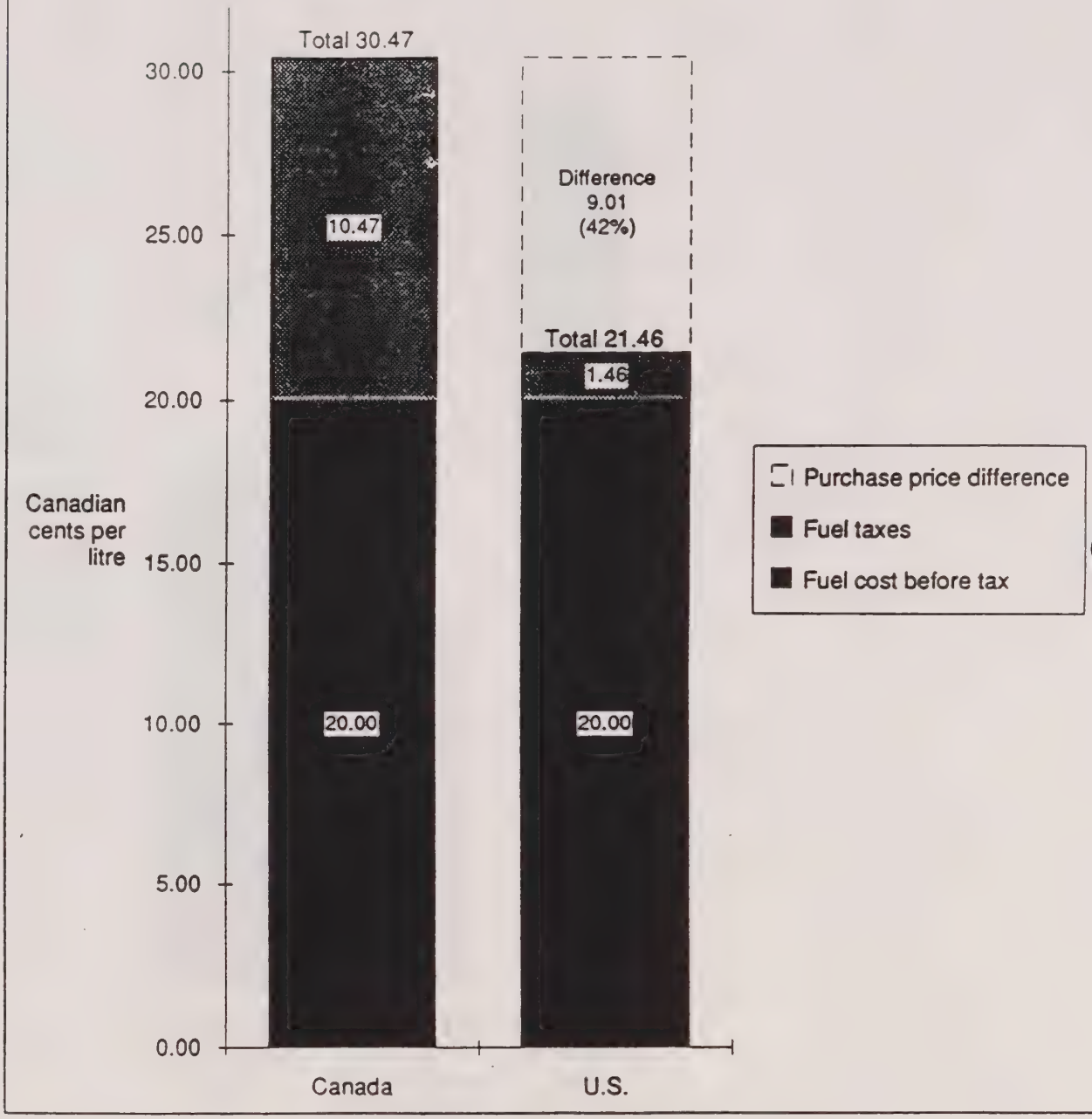
NOTES: 1) Total track infrastructure includes mainline and branchline trackage plus industrial leads and railyard track.

Total 1991 taxes paid by CN and CP Rail if they paid tax at:
(A) Canadian rates (i.e. current situation);
(B) U.S. rates (except for payroll taxes at Canadian rates);
(C) U.S. rates for all taxes including payroll.

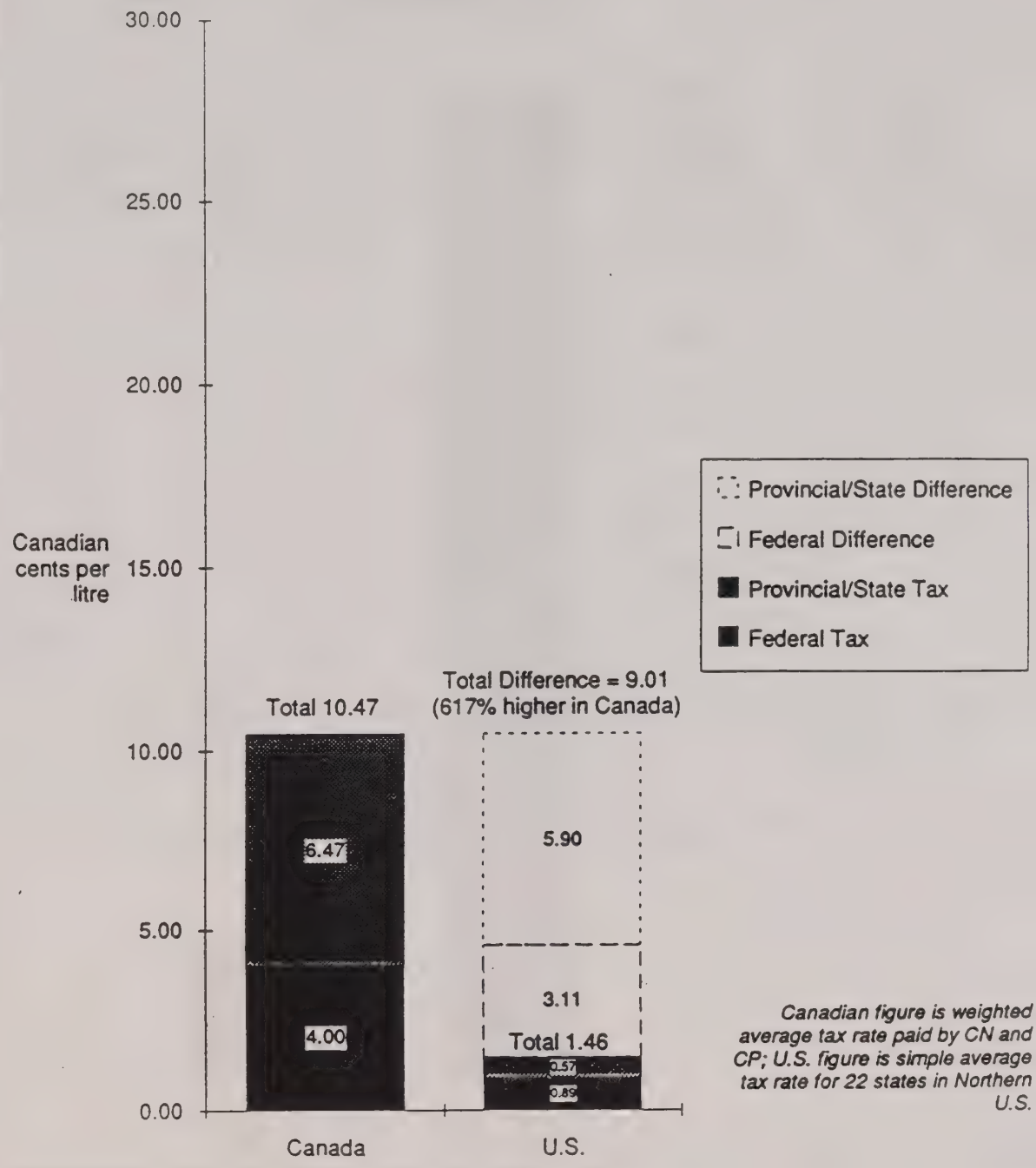


U.S. tax rates are the average of seven Class I carriers

Cost to railways of locomotive fuel and taxes, 1991.
(Locomotive diesel fuel prices before taxes in both the U.S. and Canada are about 20 cents Canadian per litre.)

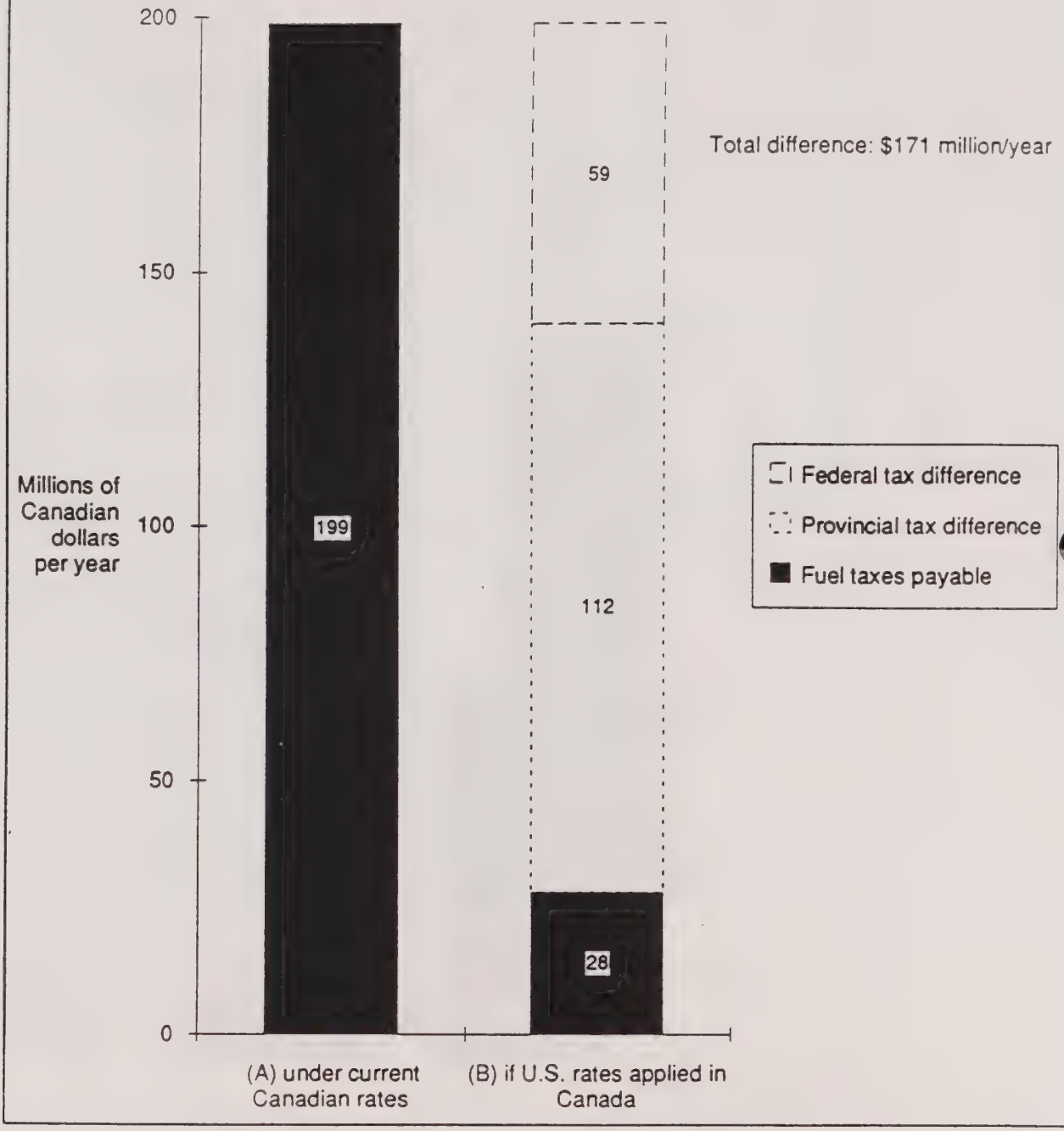


Federal and Provincial/State Taxes on Locomotive Fuel.



Canadian figure is weighted average tax rate paid by CN and CP; U.S. figure is simple average tax rate for 22 states in Northern U.S.

Fuel costs to CN and CP Rail combined:
(A) under current fuel tax rates in Canada;
(B) if U.S. fuel tax rates applied in Canada.



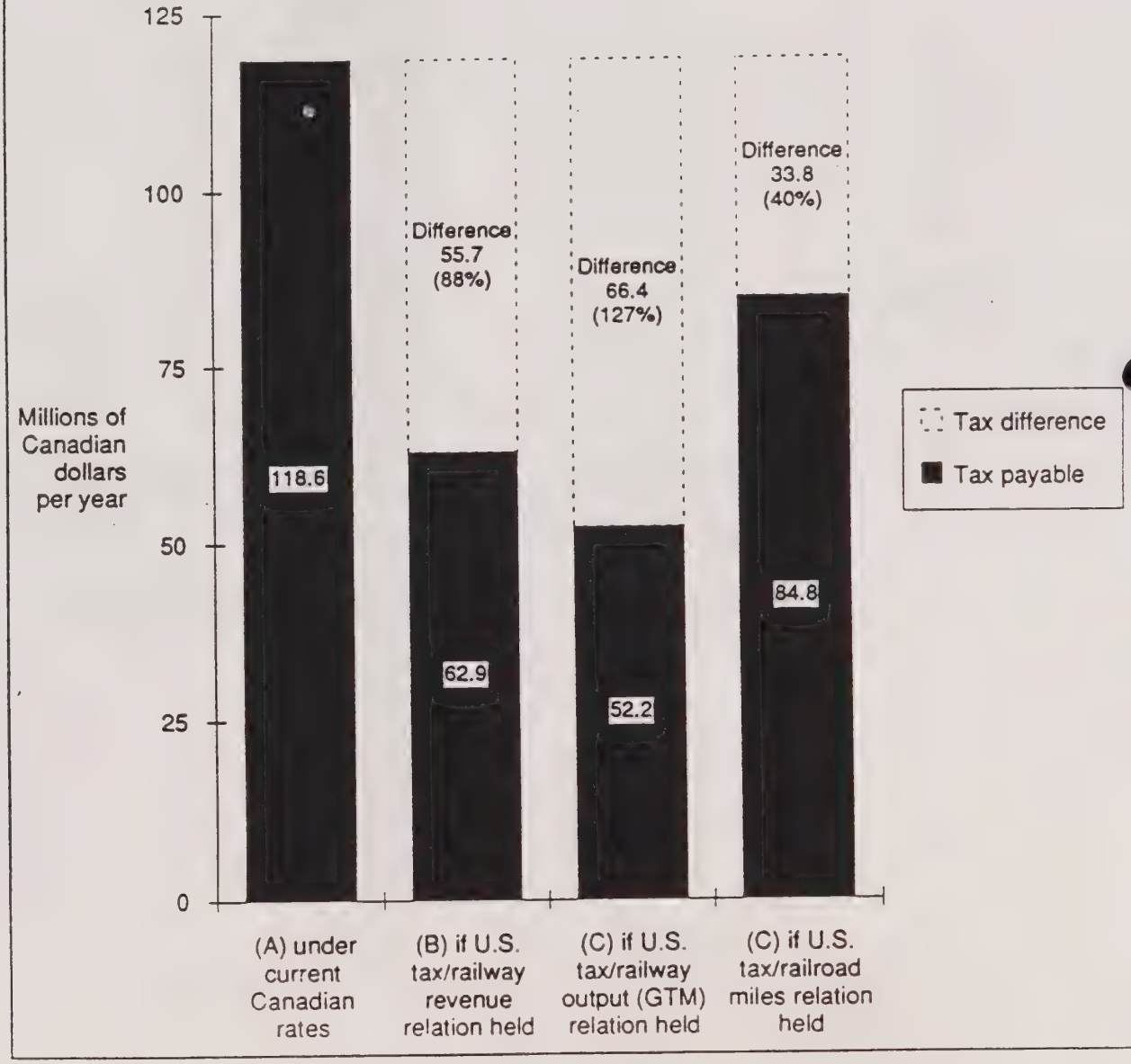
FEDERAL AND PROVINCIAL RAILWAY FUEL TAX RATES

(cents / litre)

PROV.	FED. EXCISE TAX	PROV. FUEL TAX RATE (RAILWAYS)	COMBINED TAXES	YEAR 1990 LITRES CONSUMED BY CP RAIL (MILLIONS)	TOTAL COST OF PROV. TAXES ($000'S)
B.C.	4.00	3.42	7.42	230.6	7,887
ALTA	4.00	7.00	11.00	111.8	7,826
SASK.	4.00	15.00	19.00	101.3	15,195
MAN.	4.00	13.60	17.60	68.2	9,275
ONT.	4.00	3.40	7.40	268.8	9,139
QUE.	4.00	3.00	7.00	27.7	831

NOTES:
1) Tax rates current at January 1, 1991
2) As of January 1, 1991 the Federal Sales Tax on fuel has been replaced by the 7% GST. The GST paid on fuel is not shown on this table as it will be recovered through input tax credits
3) Total Cost of Provincial Taxes column based on 1990 consumption at January 1, 1991 tax rates.

Property Taxes paid by CN and CP Rail combined, 1991
(A) currently payable under Canadian rates.
Payable if the U.S. Class I railroad rates applied relative to:
(B) railway revenues;
(C) railway output in gross ton miles; and
(D) miles of railroad.



Document: 830-399/005

Traduction du Secrétariat

48E CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

L'industrie charbonnière canadienne
Son importance pour le pays

L'Association charbonnière canadienne

HALIFAX (Nouvelle-Écosse)
Du 22 au 24 septembre 1991

VEUILLEZ NOTER

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L'INDUSTRIE CHARBONNIÈRE CANADIENNE
SON IMPORTANCE POUR LE PAYS

Présenté par
l'ASSOCIATION CHARBONNIÈRE CANADIENNE

à la

48E CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

HALIFAX (NOUVELLE-ÉCOSSE)

Le 24 septembre 1991

L'IMPORTANCE DE L'INDUSTRIE CHARBONNIÈRE POUR LE CANADA

L'Association charbonnière canadienne a l'honneur de présenter un mémoire aux ministres des Mines du Canada. L'Association regroupe la plupart des principaux producteurs de charbon (soit environ 95 p. 100 du charbon produit au Canada), cinq entreprises de services publics qui utilisent le charbon et les deux principales sociétés de chemins de fer.

Nous aimerions féliciter George Miller et son personnel de l'Association minière du Canada pour la rédaction de cet excellent mémoire exhaustif. Une bonne part du mémoire se rapporte à l'industrie charbonnière et jouit de notre approbation. Nous vous le recommandons.

Nous aimerions nous attarder non seulement à l'importance actuelle du secteur du charbon, mais encore aux enjeux de notre industrie, des provinces et du Canada pour veiller que le charbon continue d'être important au Canada et corresponde à la vision de l'Association charbonnière d'"un monde qui reconnaît que le charbon est la source d'énergie primordiale en raison de son abondance, de sa sécurité, de sa fiabilité et de son caractère économique et environnemental".

Pour y arriver, nous aimerions vous faire part des résultats de deux études (l'une déjà publiée et l'autre bientôt) qui portent respectivement sur ce qui suit :

1. l'importance des industries d'exploitation des ressources en tant que locomotives de l'économie;
2. une analyse détaillée de la contribution de l'industrie charbonnière aux économies régionale et nationale.

Nous ferons par la suite des remarques sur certaines questions de principe cruciales qui sont imbriquées, mais qui doivent être réglées afin que notre industrie réalise sa vision et conserve son rôle au sein de l'économie.

LES INDUSTRIES D'EXPLOITATION DES RESSOURCES EN TANT QUE LOCOMOTIVES DE L'ÉCONOMIE

Présentée en mars 1991 par le ministère des Finances et des Relations avec les corporations de la Colombie-Britannique pour la table ronde de la C.-B. sur l'environnement et l'économie, la première étude s'intitule "The Structure of the British Columbia Economy: A Land Use Perspective".

Cette analyse approfondie des liens qui unissent les industries démontre que les exportations du secteur des ressources

naturelles (dont le charbon et d'autres minerais) sont à l'origine de plus de 23 p. 100 des emplois provinciaux et que 71 p. 100 de l'ensemble des emplois créés par les exportations sont dus aux exportations de ressources naturelles.

Contrairement aux résultats des analyses traditionnelles, les auteurs ont conclu que le secteur des ressources naturelles est la principale locomotive de l'économie et est une importante source d'emplois dans d'autres secteurs.

On pourrait s'attendre qu'une étude semblable obtienne les mêmes résultats à l'extérieur des centres industriels de l'Ontario et du Québec.

L'INCIDENCE ÉCONOMIQUE DE L'INDUSTRIE CHARBONNIÈRE AU CANADA

Le Canadian Energy Research Institute (CERI) publiera bientôt un rapport sur le charbon au Canada, qui brosse un tableau de l'historique de l'industrie canadienne du charbon et de sa situation actuelle, en plus de son rôle primordial dans l'exploitation des installations ferroviaires et portuaires au Canada. L'étude évalue les liens qui rattachent l'industrie charbonnière à d'autres secteurs de l'économie canadienne et son incidence sur l'emploi et la valeur ajoutée partout au Canada.

À part les répercussions directes et indirectes liées à l'exploitation minière, au transport ferroviaire et aux activités portuaires, l'étude n'a pas évalué les répercussions indirectes en aval de l'exploitation et de la livraison du charbon (c.-à-d. production d'électricité et sidérurgie) en raison de données insuffisantes. Puisque la production d'électricité à partir de la combustion du charbon en Saskatchewan, en Ontario, en Alberta et en Nouvelle-Écosse et la production d'acier en Nouvelle-Écosse et en Ontario sont importantes, on doit conclure que le nombre d'emplois créés et les revenus versés sont également considérables.

Avec la permission du CERI, nous nous permettons de citer d'importants passages qui soulignent les grandes conclusions de l'étude.

> Selon les estimations les plus prudentes, le Canada possède des réserves exploitables de charbon d'approximativement 6,5 milliards de tonnes, soit environ l'équivalent de 100 ans d'exploitation au rythme actuel. Les indices d'exploitation des réserves canadiennes de pétrole brut et de gaz naturel ne sont respectivement que de 13 et 27 ans. D'autres évaluations du gouvernement de la C.-B. et de l'Energy Resources Conservation Board de l'Alberta indiquent que l'indice d'exploitation du charbon fluctue entre 500 et 700 ans. Il est indubitable que le charbon canadien est en mesure

d'approvisionner davantage les marchés national et internationaux.

Au Canada, le charbon est la deuxième source d'énergie électrique en importance après l'hydro-électricité. Elle est notamment importante en Alberta, en Saskatchewan, en Nouvelle-Écosse et en Ontario.

On peut soutenir que le lien le plus important entre l'industrie charbonnière canadienne et l'économie nationale sont les transports, car la compétitivité du charbon canadien est en grande mesure tributaire du coût et de la rentabilité du transport du charbon sur de grandes distances vers les marchés nationaux et internationaux. Les expéditions de charbon ont une incidence considérable sur les revenus et les emplois dans bon nombre de ports et de sociétés ferroviaires au Canada. Le charbon transporté par chemin de fer et déchargé dans les ports canadiens a été à l'origine d'environ 6 720 emplois au pays en 1989.

La croissance de la demande internationale en charbon canadien a grandement contribué à améliorer la capacité et l'efficacité de l'infrastructure canadienne du transport en vrac. En fait, le charbon est la plus importante marchandise transportée en vrac par le réseau ferroviaire canadien. Ces améliorations profitent à l'économie canadienne dans son ensemble en permettant à bon nombre d'autres produits dominants d'être plus compétitifs sur les marché d'exportation. En effet, toute réduction considérable des expéditions de charbon aurait des répercussions négatives sur le coût d'expédition d'autres marchandises, au détriment de la compétitivité du Canada.

Le charbon au sein de l'économie canadienne

L'industrie charbonnière canadienne joue un rôle important au sein de notre économie, non seulement en fournissant un combustible peu coûteux pour la production d'électricité au pays et en tant que produit susceptible d'être exporté, mais encore en suscitant une demande indirecte comme l'acier au moyen de l'achat de matériel minier, les années-personnes de travail d'une main-d'oeuvre compétente et l'achat et l'utilisation de biens et de services connexes.

L'emploi

En 1989, 11 239 personnes travaillaient dans le secteur canadien de l'exploitation du charbon, soit environ 10 p. 100 du nombre total d'emplois dans le secteur minier au Canada. Bien que la production de charbon ait de vastes répercussions sur beaucoup d'industries canadiennes, certaines industries comme la vente en gros, le commerce au détail, les services d'affaires, le transport par rail et les services connexes sont les plus visés.

Au Canada, l'exploitation et le transport du charbon ont créé en 1989 entre 33 000 et 35 000 emplois, c'est-à-dire qu'un emploi dans l'extraction du charbon en entraîne deux autres au sein de l'économie canadienne.

En outre, la présente évaluation minimise quelque peu le nombre d'emplois reliés au charbon, car elle ne tient pas compte des emplois au sein des bureaux d'experts-conseils ou des services gouvernementaux de gestion, de recherche et de développement. Voici une ventilation des emplois selon les régions :

Colombie-Britannique	13 800 années-personnes
Alberta	6 400 années-personnes
Saskatchewan	1 320 années-personnes
Nouvelle-Écosse	7 600 années-personnes
Nouveau-Brunswick	530 années-personnes
Transport du charbon	6 700 années-personnes

Les produits financiers

L'industrie canadienne du charbon a été la source en 1989 de recettes directes à valeur ajoutée de 1,2 milliard de dollars. En tant compte des recettes indirectes à valeur ajoutée d'industries qui appuient l'exploitation du charbon au Canada et des retombées financières, la valeur ajoutée totale pour l'économie canadienne a été de 2,8 milliards de dollars. À part les provinces productrices, ce sont les industries manufacturières de l'Ontario et du Québec qui ont essentiellement profité de l'exploitation du charbon.

Un montant additionnel de 1,29 milliard de dollars, attribuable aux revenus personnels liés aux activités portuaires et ferroviaires, se greffe aux sommes citées ci-dessus, pour porter les recettes totales à valeur ajoutée de l'exploitation et du transport canadiens du charbon à 3,2 milliards de dollars en 1989. Pour chaque million de dollars en recettes à valeur ajoutée de l'industrie charbonnière canadienne, 1,7 million de dollars est injecté dans l'économie nationale.

LA POLITIQUE DE L'ENVIRONNEMENT

- Lois sur l'évaluation environnementale

L'industrie charbonnière canadienne n'est pas peu fière de ses réalisations dans le domaine de l'environnement et de son engagement permanent d'appliquer de nouvelles méthodes innovatrices de protection de l'environnement. En effet, le ministre de l'Environnement de l'Alberta, M. Ralph Klein, a récemment déclaré que "l'industrie charbonnière représente la meilleure position environnementale au pays. Les industries de l'Alberta qui se plaignent aujourd'hui des normes trop élevées de la province en matière d'environnement sont en fait incitées à respecter les normes mise au point conjointement par les exploitants de mines de houille et le gouvernement en 1974."

Nous estimons que ces remarques s'appliquent autant à l'industrie charbonnière d'autres provinces.

Cependant, nous faisons actuellement face, à l'instar d'autres industries qui exploitent les ressources naturelles, à un processus fédéral d'examen en matière d'environnement qui intervient plus souvent qu'auparavant et qui ne simplifie pas les démarches.

Bien que l'industrie reconnaisse que les fonctionnaires exercent leurs fonctions en toute bonne foi, le climat créé par des décisions prises au sujet de projets, tels que les projets Rafferty-Alameda et Oldman, a encouragé certains fonctionnaires à appliquer différemment les règlements déjà en vigueur.

L'industrie craint fortement que les fonctionnaires fédéraux oeuvrent de manière inconsistante, en l'absence d'un contexte législatif approprié, dans un cadre qui n'a jamais été prévu pour des processus provinciaux et des projets déjà lancés. Cette répétition des efforts entraîne des retards considérables qui limitent sérieusement l'aptitude de certains de nos membres à respecter leurs engagements commerciaux. Cette situation aboutit à une baisse inutile de la compétitivité qui ne pourrait profiter, à long terme, qu'à nos concurrents.

Nous aimerions vivement que l'on demande aux fonctionnaires fédéraux des Pêches et de l'Environnement qu'ils manifestent l'esprit de collaboration et la compréhension dont ils ont fait preuve par le passé en attendant de recevoir le nouveau cadre législatif et réglementaire et qu'ils évitent d'assumer les responsabilités qui reviennent aux provinces.

Grâce à la promulgation de la loi sur l'évaluation environnementale (C-13), le gouvernement fédéral a l'occasion de veiller à ce que la nouvelle loi tienne compte des craintes provinciales et industrielles. On ne peut trop souligner la nécessité d'une

consultation des provinces et de l'industrie ainsi que d'une loi claire, uniforme et opportune sur l'évaluation environnementale pour que l'industrie demeure compétitive.

- **Ententes sur la qualité de l'air et réchauffement planétaire**

L'industrie charbonnière canadienne appuie les mesures qui visent à réduire les émissions nocives, compte tenu des particularités écologiques et économiques des régions, et aimerait collaborer pour veiller à ce que sa contribution continue d'être significative.

Cependant, le gouvernement fédéral a récemment négocié des ententes continentales et internationales sur des normes de qualité de l'air après avoir à peine consulté l'industrie et les gouvernements provinciaux. En conséquence, l'industrie et les gouvernements provinciaux ont dû combler leur retard pour appliquer des normes parfois arbitraires sans trop connaître leurs répercussions financières, mais en sachant toutefois qu'elles auront des répercussions négatives sur nos profits déjà rejetés et qu'elles perturberont peut-être inutilement le développement des provinces qui exploitent le charbon.

Cette situation ne doit pas se répéter. L'Association charbonnière espère que toute nouvelle mesure sera d'abord l'objet d'une consultation plus étendue.

En ce qui concerne le réchauffement planétaire, l'industrie reconnaît l'existence des pressions exercées sur le gouvernement fédéral pour qu'il participe à la Conférence des Nations Unies sur l'environnement et le développement qui se tiendra au Brésil en juin prochain et donne l'impression d'un pays qui se préoccupe de l'environnement.

Cependant, le débat fait toujours rage parmi les scientifiques sur l'existence, les causes et l'incidence du phénomène qualifié de réchauffement planétaire. Les gouvernements devraient surtout mettre l'accent à ce moment-ci sur leur propre analyse indépendante des données scientifiques disponibles en prenant des mesures de précaution qui sont logiques puisqu'elles réduisent l'émission de gaz à effet de serre.

Si les données scientifiques justifient vraiment les mesures, il convient d'examiner l'ensemble des répercussions économiques de diverses orientations <u>avant</u> de proposer ou de convenir d'objectifs précis.

On se doit de prendre de nouvelles mesures comme faire bénéficier les pays de l'Europe de l'Est et la Chine de la compétence canadienne pour les aider à réduire les émissions de

gaz acides et à effet de serre ainsi qu'à améliorer leur extraction minière. Lancé par les gouvernements et appuyé par l'industrie charbonnière et les sociétés d'ingénierie au Canada, un programme semblable pourrait réduire davantage les répercussions néfastes sur l'environnement en général que toute mesure nationale. De même, la recherche d'une meilleure efficacité doit se poursuivre en appuyant de nouvelles méthodes de recherche, de développement et de démonstration en matière de techniques de pointe qui utilisent le charbon épuré.

Ce mode d'action est également conforme au programme d'encouragement de la compétitivité du gouvernement fédéral.

ÉCONOMIE ET TAXES

- **Politique monétaire**

Comme nous l'avons déjà souligné, l'industrie est le pivot économique dans beaucoup de régions du pays, car elle appuie de nombreuses industries des services et engendre des recettes d'exportation très utiles. Aucune question d'intérêt public n'est plus importante pour l'aptitude à long terme de l'industrie charbonnière à continuer d'accorder son soutien que la politique monétaire, notamment dans le domaine des exportations.

Puisque la majeure partie de nos exportations sont exprimées en dollars américains, la politique monétaire fédérale continue d'étouffer l'industrie charbonnière canadienne. Depuis 1988, le dollar canadien surévalué a engendré des pertes de recettes supérieures à 200 millions de dollars, somme qui ne peut être réinvestie et consacrée à la dette. Bien qu'il soit en baisse vers un niveau raisonnable, le coût de l'emprunt au Canada demeure onéreux pour une industrie qui est fortement endettée et qui doit investir beaucoup dans les techniques afin de demeurer à l'avant-garde de l'exploitation écologique et de la réhabilitation des mines de charbon.

L'industrie charbonnière comprend que ce problème est le résultats du jeu de forces internationales, mais les gouvernements doivent reconnaître que la contribution importante de l'industrie minière à l'économie nationale ne peut être maintenue indéfiniment en présence d'une politique monétaire semblable.

- **Obstacles internationaux au commerce**

À l'instar de la plupart des commerçants internationaux des produits, l'industrie charbonnière canadienne est un preneur de prix. Les subventions considérables à l'extraction du charbon accordées par les gouvernements du Japon, de l'Allemagne, de l'Espagne et du Royaume-Uni perturbent les marchés et font baisser les prix qui peuvent être obtenus sur le marché ouvert. À titre d'exemple, les subventions allemandes en 1987 ont été

quatre fois supérieures aux recettes canadiennes totales de l'exportation de charbon, soit 64,50 $ US la tonne.

La suppression de ces subventions est essentielle pour que des producteurs efficaces comme le Canada et l'Australie soient en mesure d'exporter un charbon de grande qualité à des prix réalistes.

Certains signes permettent de croire que ces subventions seront progressivement supprimées. Nous encourageons les gouvernements fédéral et provinciaux à entretenir un dialogue avec leurs homologues étrangers pour que la rationalité revienne au sein des marchés internationaux du charbon.

- **Obstacles nationaux au commerce**

L'Association charbonnière est encouragée par l'engagement du gouvernement fédéral d'examiner la question des obstacles interprovinciaux au commerce. Nous recommandons avec insistance que les taxes fédérales et provinciales sur les carburants diesels utilisés en extraction minière et en transport ferroviaire soient examinées dans le contexte de la concurrence que se livrent l'industrie canadienne et les producteurs américains au centre du Canada et dans les pays de la région du Pacifique. Nous avons ajouté en annexe quelques données utiles pour illustrer le vaste fossé qui sépare les expéditeurs canadiens et américains en matière de taxes et même entre les expéditeurs provinciaux.

- **Conclusion**

L'industrie charbonnière canadienne a beaucoup contribué, et continue de le faire, à la richesse du pays. Le coût élevé de l'exploration de bassins houillers âgés, les événements récents dans le golfe Persique, la croissance rapide de la demande énergétique des pays en développement et la mise au point de nouvelles techniques de charbon épuré, contribueront à accroître la demande en charbon. Le charbon est la source d'énergie économique et considérable qui permettra au Canada de demeurer compétitif sur les marchés internationaux.

L'industrie charbonnière canadienne s'engage à réduire les répercussions de l'extraction, du traitement, du transport et de la combustion du charbon au Canada sur l'environnement. **Bien qu'il soit important que l'industrie minière et les consommateurs de charbon au Canada veillent à ce que ce minerai soit extrait, transporté et brûlé avec une incidence écologique minimale, il est également essentiel que les mesures de réglementation tiennent comptent de l'importance nationale et régionale de l'industrie charbonnière canadienne et des répercussions économiques des diveres mesures de réglementation.** Puisque l'industrie minière du charbon est étroitement liée à d'autres secteurs de l'économie

canadienne, les politiques gouvernementales qui visent l'industrie du charbon auront, à leur tour, des répercussions sur beaucoup d'autres secteurs de l'économie canadienne.

ANNEXE 1

du

MÉMOIRE DE L'ASSOCIATION CHARBONNIÈRE CANADIENNE

à la

48e CONFÉRENCE DES MINISTRES DES MINES

HALIFAX (NOUVELLE-ÉCOSSE)

Le 24 septembre 1991

1. Taxes totales payées par le CN et le CP Rail en 1991 aux taux suivants :
   A) taux canadiens (c.-à-d. en vigueur);
   B) taux américains (sauf les charges sociales aux taux canadiens);
   C) taux américains pour toutes les taxes, y compris les charges.

2. En millions de dollars canadiens par année

3. Différence

4. Différence des taxes canadiennes actuelles
   Charges sociales
   Impôts fonciers
   Taxes sur les carburants et taxes de vente

5. A) Taux canadiens en vigueur

6. B) Impôts fonciers et taxes sur les carburants aux taux américains; charges sociales aux taux canadiens

7. C) Ensemble des taxes aux taux américains

8. Taux américains représentent une moyenne de sept transporteurs de catégorie I

1. Coût aux sociétés ferroviaires du carburant pour les locomotives et des taxes en 1991. (Les prix du carburant diesel pour locomotives avant le paiement des taxes aux É.-U. et au Canada sont d'environ 20 cents canadiens le litre.)

2. Différence

3. Cents canadiens le litre

4. Différence du prix d'achat
   Taxes sur les carburants
   Coût du carburant avant le paiement des taxes

5. É.-U.

1. Taxes fédérale, provinciales et des États sur le carburant des locomotives

2. Cents canadiens le litre

3. Différence totale = 9,01 (617 % supérieure au Canada)

4. Différence provinces-États
   Différence fédérale
   Taxe provinciale/État
   Taxe fédérale

5. É.-U.

6. Les données canadiennes correspondent à un taux d'imposition moyen pondéré payé par le CN et le CP; les données américaines représentent un taux moyen simple pour 22 États du nord des É.-U.

1. Coût en carburant du CN et CP Rail réunis :
   A) aux taux en vigueur au Canada;
   B) si les taux américains étaient appliqués au Canada.

2. En millions de dollars canadiens par an

3. Différence totale: 171 millions $/an

4. Différence de la taxe fédérale
   Différence de la taxe provinciale
   Taxes payables sur les carburants

5. A) Aux taux canadiens en vigueur.

6. Si les taux américains étaient appliqués au Canada.

1. Impôts fonciers payés par le CN et le CP réunis en 1991
A) Payables aux taux canadiens en vigueur
Payables si les taux américains pour la catégorie I s'appliquent :
B) aux recettes;
C) au rendement par tonnes-milles brutes;
D) aux milles de voie ferrée.

2. En millions de dollars canadiens par an

3. Différence

4. Différence des taxes
Taxes payables

5. A) Aux taux canadiens en vigueur.

6. B) Si les taux américains s'appliquent aux recettes;

7. C) Si les taux américains s'appliquent au rendement

8. D) Si les taux américains s'appliquent aux voies ferrées.

TAUX D'IMPOSITION FÉDÉRAL ET PROVINCIAUX
POUR LES CARBURANTS DES SOCIÉTÉS FERROVIAIRES
(cents le litre)

1. PROVINCE

2. TAXE D'ACCISE FÉDÉRALE

3. TAUX D'IMPOSITION PROVINCIAL (SOC. FERR.)

4. ENSEMBLE DES TAXES

5. NOMBRE DE LITRES CONSOMMÉS PAR CP RAIL EN 1990 (EN MILLIONS)

6. COÛT TOTAL DES TAXES PROVINCIALES (EN MILLIERS DE DOLLARS)

7. C.-B.
ALB.
SASK.
MAN.
ONT.
QC

8. NOTA :

1) Taux d'imposition en vigueur au 1er janvier 1991.

2) La taxe de vente fédérale sur les carburants a été remplacée par la TPS de 7 % le 1er janvier 1991. Le tableau ci-dessus n'indique pas la TPS car elle sera récupérée à l'aide de crédits d'impôt.

3) La colonne du coût total des taxes provinciales est fondée sur la consommation en 1990, selon les taux d'imposition le 1er janvier 1991.

TAUX D'IMPOSITION FÉDÉRAL ET PROVINCIAUX
POUR LES CARBURANTS
TRANSPORTS FERROVIAIRE ET PAR CAMIONS
(cents le litre)

1. PROVINCE

2. TAXE D'ACCISE FÉDÉRALE (TRANSPORTS FERR. ET PAR CAMIONS)

3. TAUX D'IMPOSITION POUR LE TRANSPORT FERROVIAIRE

4. TAUX D'IMPOSITION POUR LE TRANSPORT PAR CAMIONS

5. TAXE AU TRANSPORT FERROVIAIRE PAR RAPPORT À LA TAXE AU TRANSPORT PAR CAMIONS

6. C.-B.
ALB.
SASK.
MAN.
ONT.
QC

7. NOTA :
1) Taux d'imposition en vigueur au 1er janvier 1991.

2) La taxe de vente fédérale sur les carburants a été remplacée par la TPS de 7 % le 1er janvier 1991. Le tableau ci-dessus n'indique pas la TPS car elle sera récupérée à l'aide de crédits d'impôt.

IMPÔTS FONCIERS ET TAXES SUR LES CARBURANTS
INCIDENCE DE CES TAXES SUR LE CP RAIL

1. PROVINCE

2. IMPÔTS FONCIERS ANNUELS (EN MILLIONS DE $)

3. TAXES ANNUELLES SUR LES CARBURANTS (EN MILLIONS DE $)

4. TOTAL (EN MILLIONS DE $)

5. RÉUNION DES TAXES PAR MILLE DE VOIE DANS LA PROVINCE ($/MILLE)

6. C.-B.
ALB.
SASK.
MAN.

TOTAUX

7. NOTA :
1) Les taxes annuelles sur les carburants correspondent aux taxes provinciales seulement et sont fondées sur les achats du CP Rail en 1990 aux taux d'imposition en vigueur au 1er janvier 1991.

2) Les impôts fonciers annuels portent sur l'année 1990.

IMPÔTS FONCIERS DU CP RAIL

1990

1. PROVINCE

2. PAIEMENT (EN MILLIONS DE $)

3. ENSEMBLE DES VOIES FERRÉES DU CP (EN MILLES)

4. MOYENNE DES TAXES PAR MILLE DE VOIE ($/MILLE)

5. C.-B.
ALB.
SASK.
MAN.

TOTAL
(sauf Ontario)

6. NOTA : 1) Par ensemble des voies ferrées, on entend les voies principales et secondaires, les voies industrielles et les voies de garage.

ANNEXE 1

du

MÉMOIRE DE L'ASSOCIATION CHARBONNIÈRE CANADIENNE

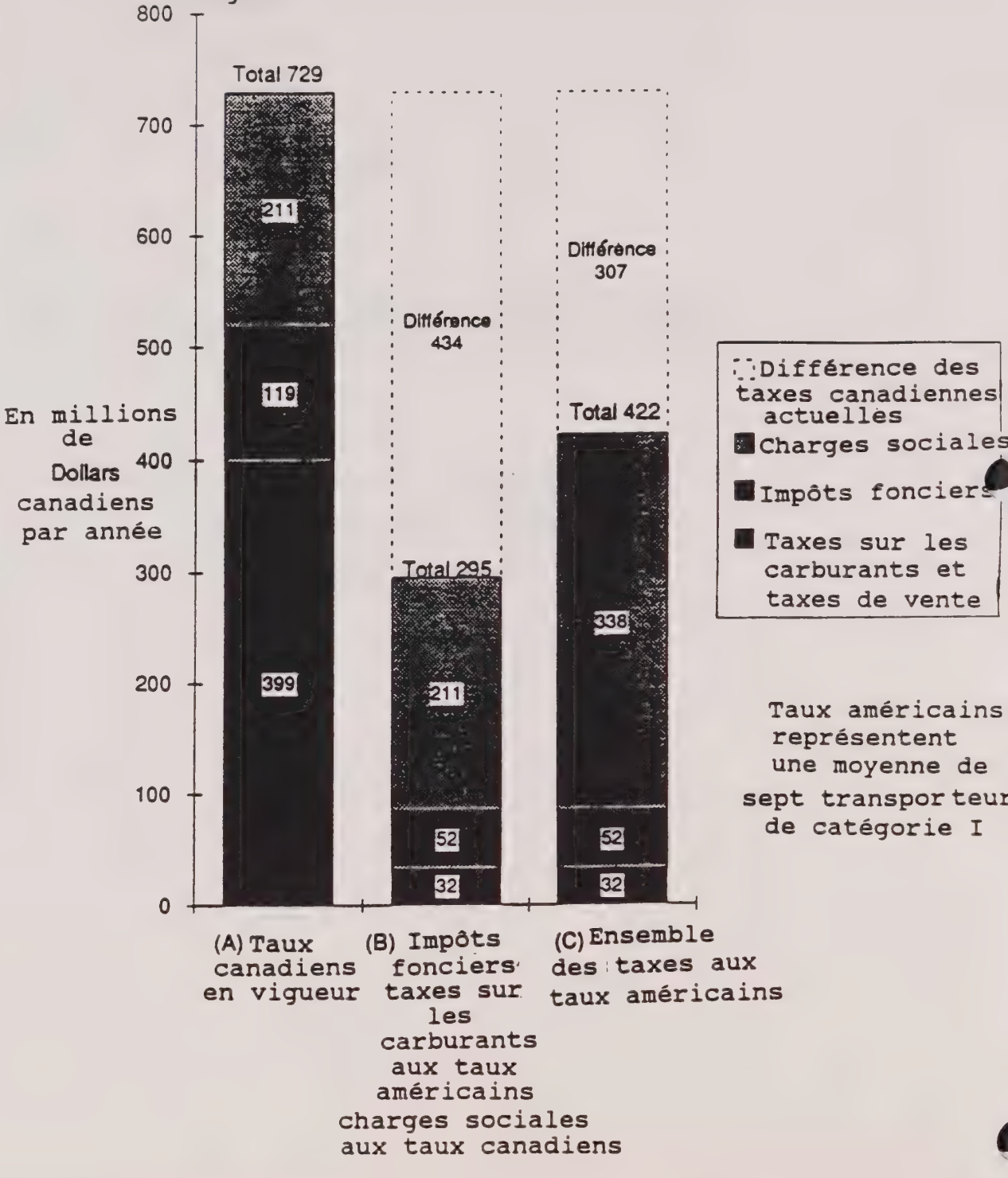
à la

48e CONFÉRENCE DES MINISTRES DES MINES

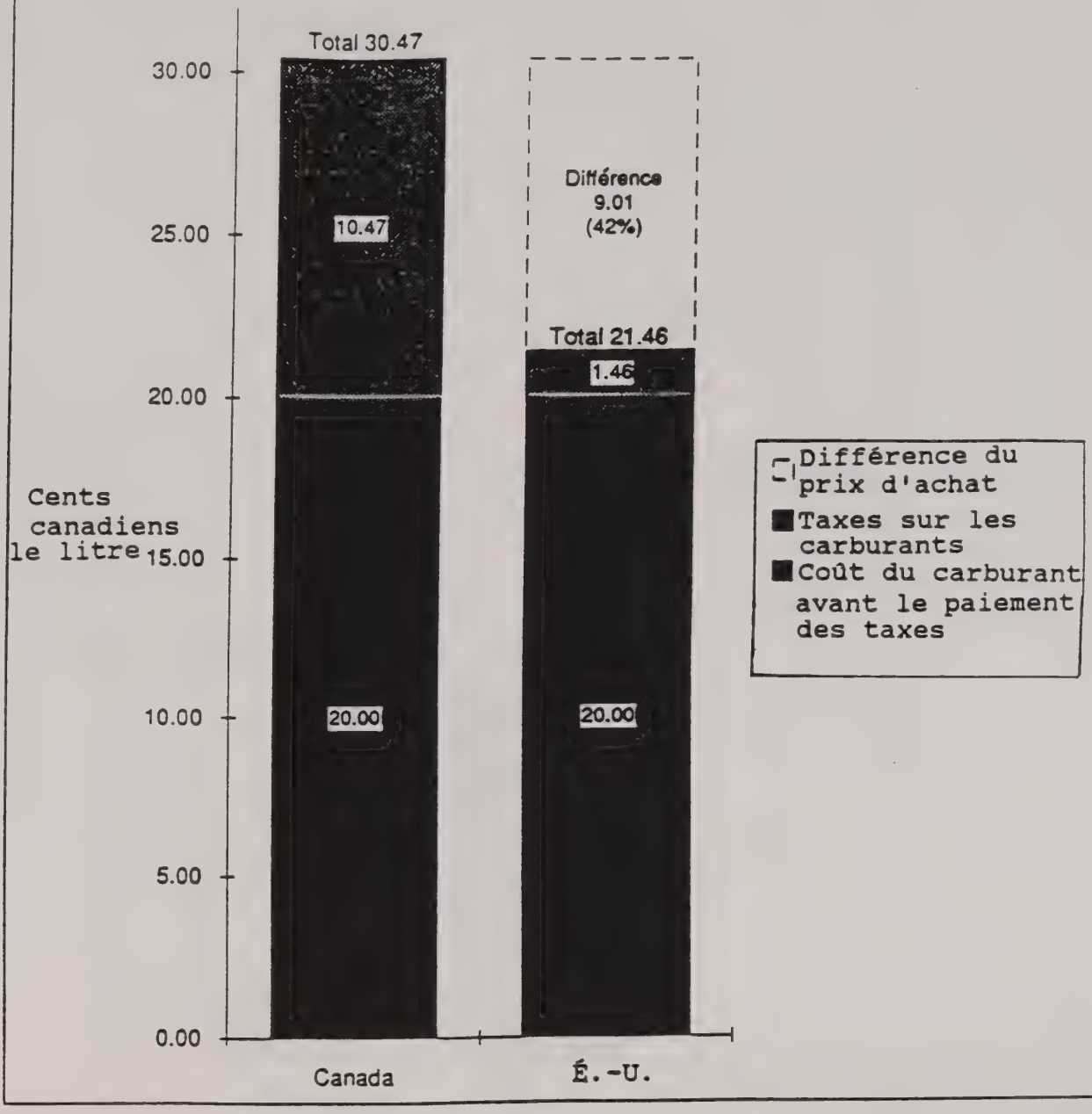
HALIFAX (NOUVELLE-ÉCOSSE)

Le 24 septembre 1991

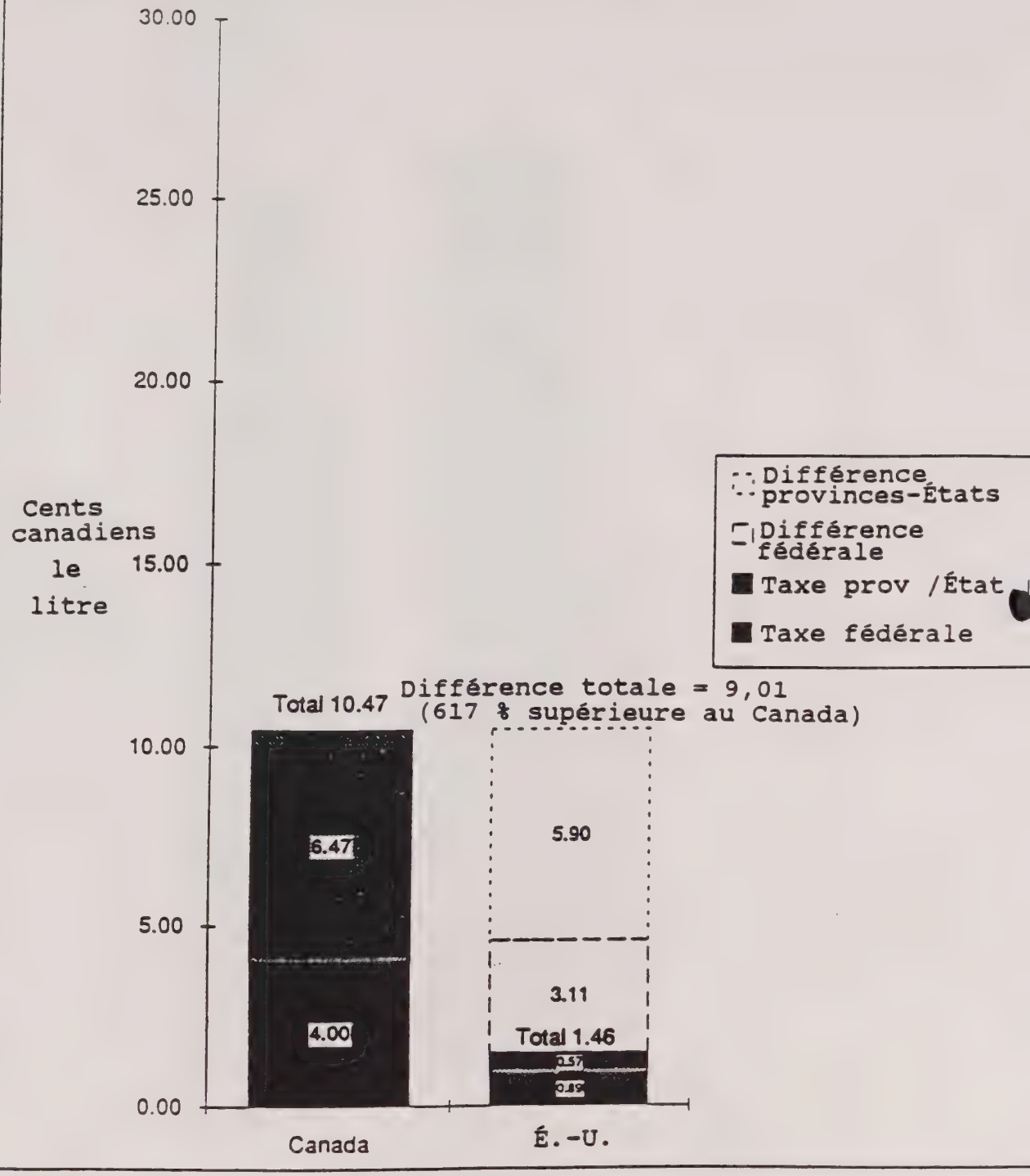
1. Taxes totales payées par le CN et le CP Rail en 1991 aux taux suivants :
   A) taux canadiens (c.-à-d. en vigueur);
   B) taux américains (sauf les charges sociales aux taux canadiens);
   C) taux américains pour toutes les taxes, y compris les charges.



Coût aux sociétés ferroviaires du carburant pour les locomotives et des taxes en 1991. (Les prix du carburant diesel pour locomotives avant le paiement des taxes aux É.-U. et au Canada sont d'environ 20 cents canadiens le litre.)

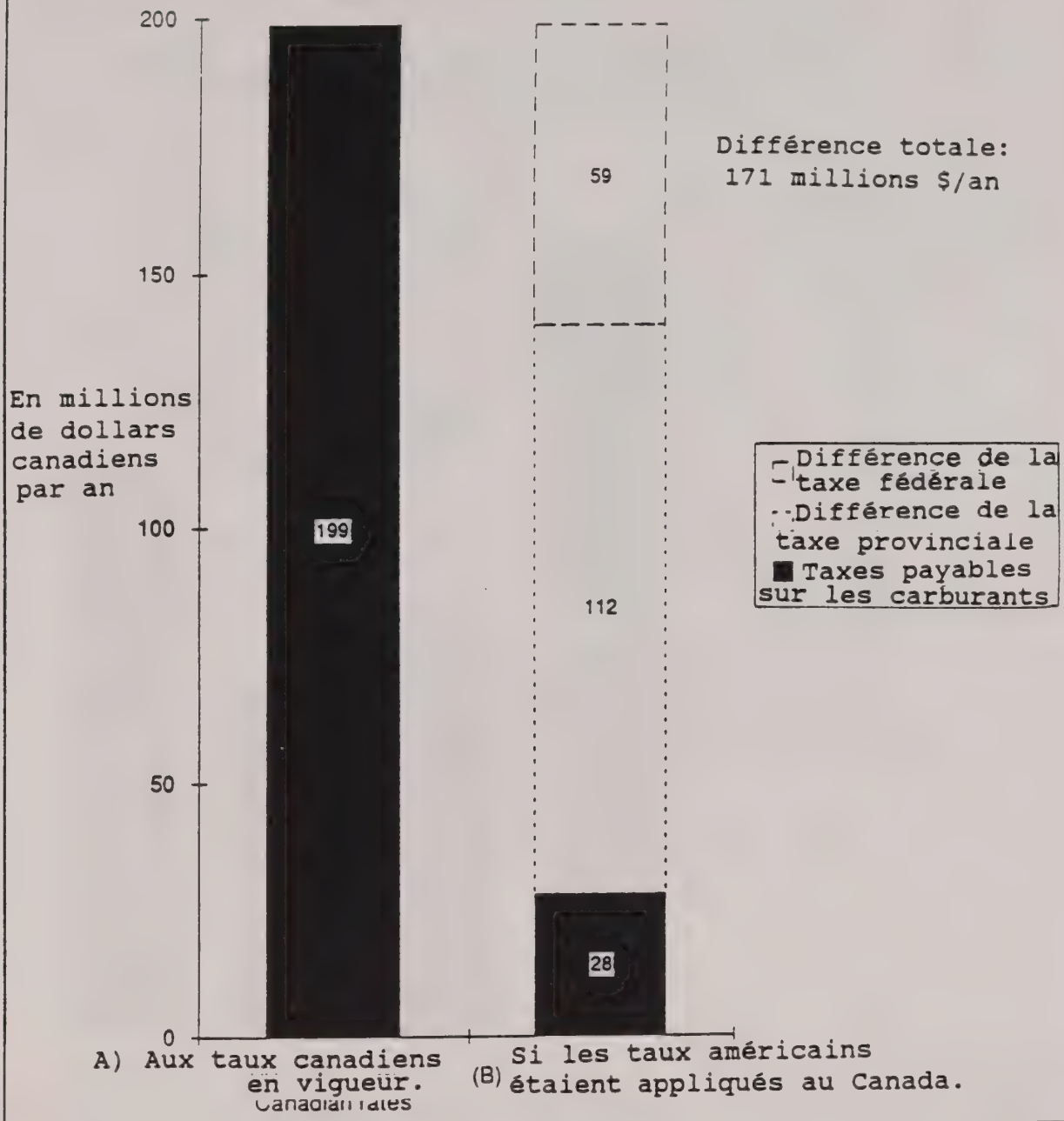


Taxes fédérale, provinciales et des États sur le carburant des locomotives

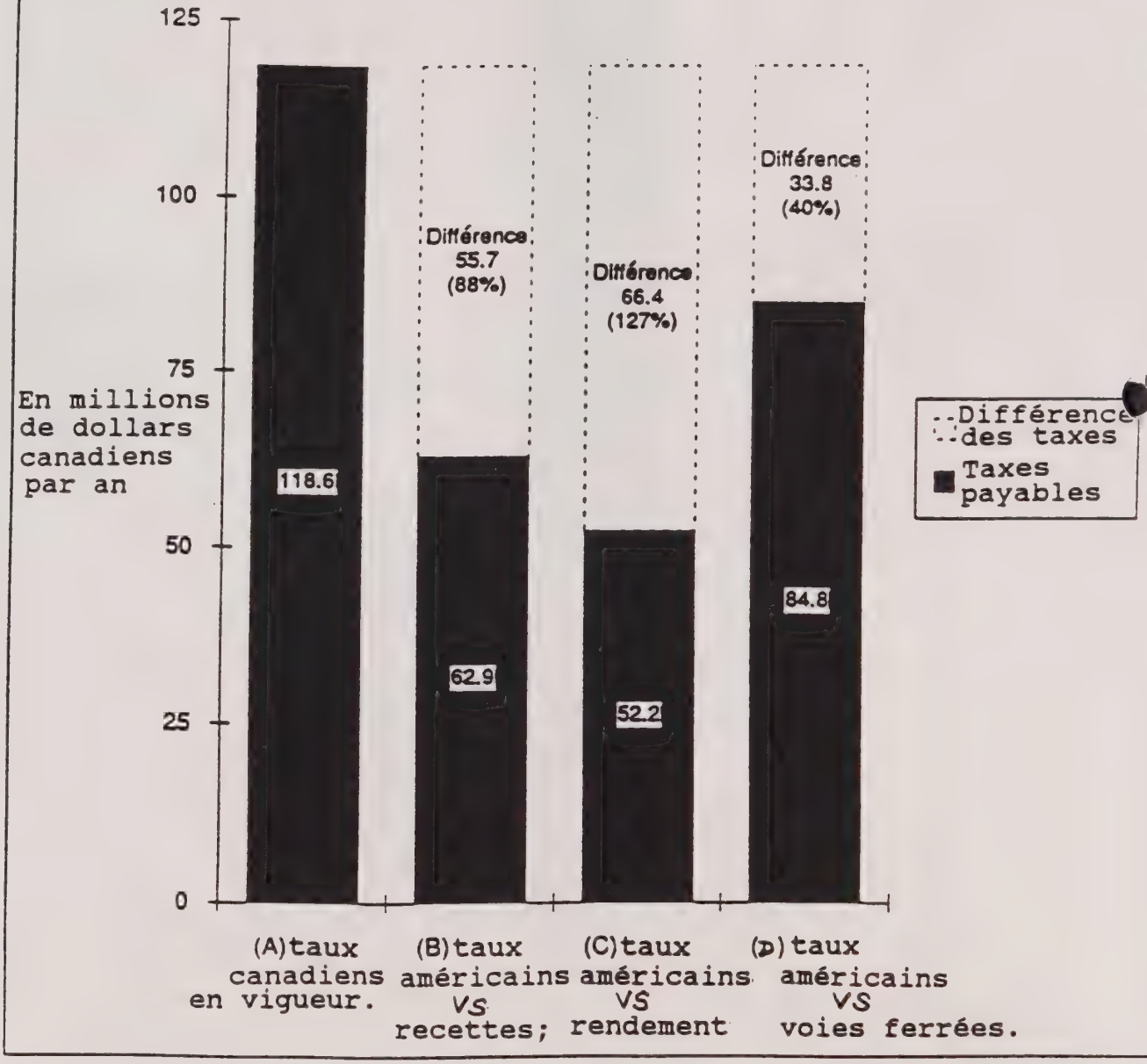


Les données canadiennes correspondent à un taux d'imposition moyen pondéré payé par le CN et le CP; les données américaines représentent un taux moyen simple pour 22 États du nord des É.-U.

Coût en carburant du CN et CP Rail réunis :
A) aux taux en vigueur au Canada;
B) si les taux américains étaient appliqués au Canada.



Impôts fonciers payés par le CN et le CP réunis en 1991
A) Payables aux taux canadiens en vigueur
Payables si les taux américains pour la catégorie I s'appliquent :
B) aux recettes;
C) au rendement par tonnes-milles brutes;
D) aux milles de voie ferrée.



IMPÔTS FONCIERS ET TAXES SUR LES CARBURANTS
INCIDENCE DE CES TAXES SUR LE CP RAIL

PROVINCE	IMPÔTS FONCIERS ANNUELS ($MILLIONS)	TAXES ANNUELLES SUR LES CARBURANTS ($MILLIONS)	TOTAL ($MILLIONS)	RÉUNION DES TAXES PAR MILLE DE VOIE DANS LA PROVINCE ($/MILLE)
C.-B.	20.2	7.9	28.1	13,721
ALB.	3.9	7.8	11.7	8,699
SASK.	3.4	15.2	18.6	4,373
MAN.	5.3	9.3	14.6	5,332
TOTAUX	32.8	40.2	73.0	

NOTA :
1) Les taxes annuelles sur les carburants correspondent aux taxes provinciales seulement et sont fondées sur les achats du CP Rail en 1990 aux taux d'imposition en vigueur au 1er janvier 1991.

2) Les impôts fonciers annuels portent sur l'année 1990.

TAUX D'IMPOSITION FÉDÉRAL ET PROVINCIAUX
POUR LES CARBURANTS DES SOCIÉTÉS FERROVIAIRES
(cents le litre)

PROVINCE	TAXE D'ACCISE FÉDÉRALE	TAUX D'IMPOSITION PROVINCIAL (SOC. FERR.)	ENSEMBLE DES TAXES	LITRES CONSOMMÉS PAR CP RAIL EN 1990 (EN MILLIONS)	COÛT TOTAL DES TAXES PROVINCIALES (EN MILLIERS DE DOLLARS)
C.-B.	4.00	3.42	7.42	230.6	7,887
ALB.	4.00	7.00	11.00	111.8	7,826
SASK.	4.00	15.00	19.00	101.3	15,195
MAN.	4.00	13.60	17.60	68.2	9,275
ONT.	4.00	3.40	7.40	268.8	9,139
QUE.	4.00	3.00	7.00	27.7	831

NOTA :

1) Taux d'imposition en vigueur au 1er janvier 1991.

2) La taxe de vente fédérale sur les carburants a été remplacée par la TPS de 7 % le 1er janvier 1991. Le tableau ci-dessus n'indique pas la TPS car elle sera récupérée à l'aide de crédits d'impôt.

3) La colonne du coût total des taxes provinciales est fondée sur la consommation en 1990, selon les taux d'imposition le 1er janvier 1991.

TAUX D'IMPOSITION FÉDÉRAL ET PROVINCIAUX
POUR LES CARBURANTS
TRANSPORTS FERROVIAIRE ET PAR CAMIONS
(cents le litre)

PROVINCE	TAXE D'ACCISE FÉDÉRALE (TRANSPORTS FERR. ET PAR CAMIONS)	TAUX D'IMPOSITION POUR LE TRANSPORT FERROVIAIRE	TAUX D'IMPOSITION POUR LE TRANSPORT PAR CAMIONS	TAXE AU TRANSPOR FERROVIAIRE PAR RAPPORT À LA TAXE AU TRANSPOR PAR CAMIONS
C.-B.	4.00	3.42	11.44	(8.02)
ALB.	4.00	7.00	7.00	0
SASK.	4.00	15.00	10.00	5.00
MAN.	4.00	13.60	9.90	3.70
ONT.	4.00	3.40	10.90	(7.50)
QUE.	4.00	3.00	12.45	(9.45)

NOTA : 1) Taux d'imposition en vigueur au 1er janvier 1991.

2) La taxe de vente fédérale sur les carburants a été remplacée par la TPS de 7 % le 1er janvier 1991. Le tableau ci-dessus n'indique pas la TPS car elle sera récupérée à l'aide de crédits d'impôt.

IMPÔTS FONCIERS DU CP RAIL

1990

PROVINCE	PAIEMENT (EN MILLIONS DE $)	ENSEMBLE DES VOIES FERRÉES DU CP (EN MILLES)	MOYENNE DES TAXES PAR MILLE DE VOIE ($/MILLE)
C.-B.	20.2	2,048	9,863
ALB.	3.9	2,899	1,345
SASK.	3.4	4,253	799
MAN.	5.3	1,936	2,738
TOTAL (sauf Ontario)	32.8		

NOTA : 1) Par ensemble des voies ferrées, on entend les voies principales et secondaires, les voies industrielles et les voies de garage.

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48TH ANNUAL MINES MINISTERS' CONFERENCE

The Importance of the Mineral Industry to Canada

The Prospectors and Developers Association of Canada

HALIFAX, Nova Scotia
September 22-24, 1991

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THE IMPORTANCE OF THE MINERAL INDUSTRY TO CANADA

A brief presented to the

48th Mines Ministers Conference
Halifax, Nova Scotia
Tuesday, September 24, 1991

by the

The Prospectors and Developers Association of Canada

TABLE OF CONTENTS

INTRODUCTION 1

THE PRESENT 1

Mineral industry's significance to exports 1
Mineral industry's contribution to Canada 2
Natural resources; the backbone of the economy 3
Exploration and global competitiveness 4

THE TRENDS 4

Increasingly complex regulatory regime 4
Negative fiscal policies 5
Foreign countries attracting investment 6
Canadian companies increasingly active elsewhere 7
Decreasing Canadian exploration 7

THE GOALS 9

Maintaining Canada's competitive edge 9
Public policy - recognition of the mineral industry 9
Government support for mineral industry 10
Canada - world's leading supplier and consultant 11

SUMMARY AND CONCLUSIONS 12

APPENDIX A

Examples of Changing Mining Regulations in Foreign Countries

APPENDIX B

Key Economic Indicators: Change Over 1990

THE IMPORTANCE OF THE MINERAL INDUSTRY TO CANADA

Introduction

The Prospectors and Developers Association of Canada welcomes the opportunity to present the views of the Canadian exploration and development industry to the federal and provincial mines ministers.

In this brief, we address the theme of the conference, 'The importance of the mineral industry to Canada,' by first examining the valuable contribution that the industry continues to make to the prosperity of Canada and Canadians. We also look at Canada's role in a world in which competition among trading nations is intensifying, trade barriers are falling, and trading blocs are growing. We recommend that Canada's policy toward these international developments should be to devise and follow an economic strategy that will maintain and expand our competitiveness. An important part of this strategy must be to capitalize on this country's industrial strengths and capabilities. The mineral industry is one of our strongest industries.

Canada is fortunate to have a rich endowment of mineral resources with immense reserves yet to be discovered and tapped. Only with its natural resources will Canada be able to maintain its position in world trade, maintain its standard of living, reduce the national debt and pay for the social and environmental programs that are now at the top of the list of public priorities.

The Present

The mineral industry accounts for 18% of Canada's exports

Mining is of central importance to Canada's economy. Canada must trade in order to survive and our prosperity is critically dependent on our ability to compete. One quarter of our GNP and one fifth of our employment depend on exports.

TABLE 1

REGIONAL ECONOMIC IMPACT OF MINING: SOME SPECIFIC EXAMPLES

	Yellowknife, Northwest Territories	Hemlo, Ontario	Brunswick, New Brunswick
Production Start	1938	1985	1964
Employment	804	1,177	2,081
1990 Wages and Benefits	$ 53 million	$ 86 million	$ 76 million
1990 Expenditures; Goods, Services and Supplies	$ 63 million	$ 138 million	$ 169 million

In 1990 the four stages of mineral activity including mining and concentrating, smelting and refining, semi-fabrication of minerals and metals and metal fabrication contributed a total of $22.8 billion to the Canadian economy and accounted for 18% of our total export revenues. The value of mineral production per capita in Canada is $680 compared to $50 in the United States.

Mining has been a major contributor to the development of Canada

Natural resources have always been the engines that drive all regions of Canada. With intensive urbanization of our society, we often overlook the real source of our wealth.

The development and operation of the Sullivan Mine in British Columbia and the building of the Trail smelter made Canada the leading zinc producer in the world, with leadership maintained by major discoveries such as Brunswick, New Brunswick; Kidd Creek, Ontario; Mattagami, Quebec; Flin Flon, Manitoba; Buchans, Newfoundland; Faro, Yukon; and Polaris and Nanisivik, Northwest Territories. In nickel mining and smelting, Canada was a world leader for almost a century following the discoveries in the Sudbury Basin. The nickel discoveries at Thompson, Manitoba, and Raglan, Quebec, help to maintain Canada as one of the top nickel producing countries in the world.

The discovery and development of major deposits of gold in British Columbia, the Yukon, the Northwest Territories, the Canadian Shield and the Appalachian Region led Canadians to develop the isolated regions of our vast country. Mines now form the economic underpinnings of some 115 communities across Canada (Table 1, Figure 1). Potash production in Saskatchewan and New Brunswick has made Canada a leading producer of fertilizer components. The iron ore mines of Quebec and Labrador spurred the growth of Canada's economy and provided much of the traffic that warranted the building of the St. Lawrence Seaway. Eight of our ten provinces have seen important copper production.

The expertise which Canadians have gained through our long history of mining has established us as technological leaders. The global demand for our experience and expertise is well known. A recent analysis by *Energy News Record*, a New York based magazine, ranks Canada third (after the U.S. and Britain) in the export of technical expertise. Geoscience and mining contribute a significant part to these exports.

Natural resources are the backbone of this nation's economy

Natural resources account for one dollar in every five of the wealth generated by primary and secondary industries in this country. When we consider the productivity of workers in Canada's manufacturing sector, it is clear why manufacturing is faltering in this country (Figure 2). A recent report by the Organization for Economic Cooperation and Development showed that from March 1990 to March 1991 Canada recorded the biggest decreases among 24 nations in the number of jobs in manufacturing, construction, and the services sector.

In the current business climate, only those manufacturing facilities and business sectors which are tied to our natural resource industries have the best chance of surviving.

A study by the B.C. Ministry of Finance reveals that in recent times the resource sector has been responsible for 25% of British Columbia's jobs, even though it directly employs 15%. The report goes on to observe that stripping away the resource base would result in most of the service jobs disappearing. The conclusion is that "While the service sector has grown remarkably over the past 30 years, it does not, as a block, generate the economic growth that the natural resource-dependent sectors do".

We Canadians will be obliged to rely on our natural resources to maintain our standard of living. Natural resources and their development provide the only way for Canada to compete successfully in the global market place. Natural resources are the wealth-creating sectors for our economy.

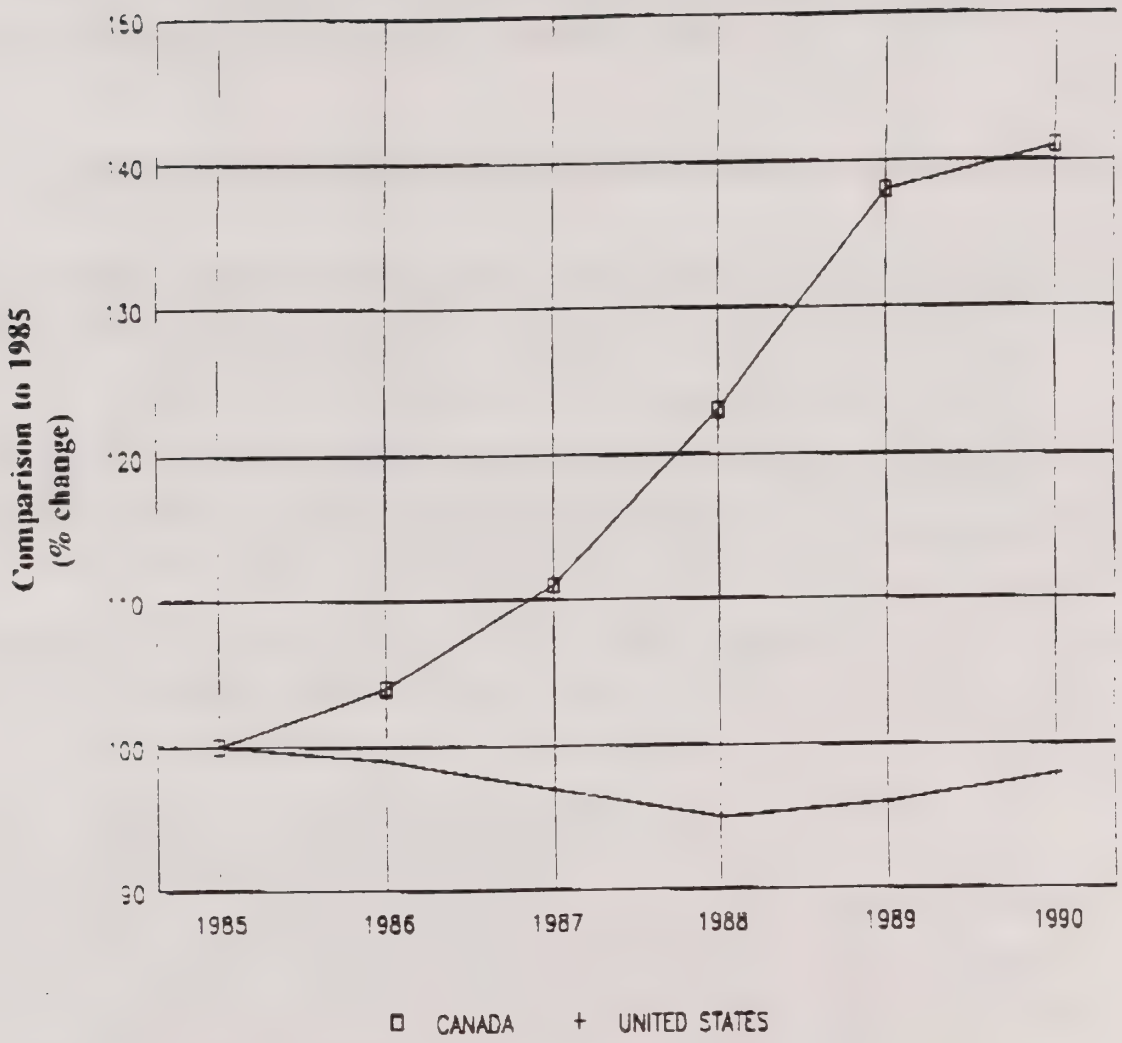


FIGURE 2: LABOUR COST IN MANUFACTURING

Source - The Economist

Exploration is critical to global competitiveness

There continues to be great growth potential for the mining industry in Canada. It is the exploration sector that will determine whether this potential is fully realized. Discoveries mark the first critical step towards identifying sufficient reserves for the mining industry. New mines are needed both to maintain our production rates and keep our costs competitive.

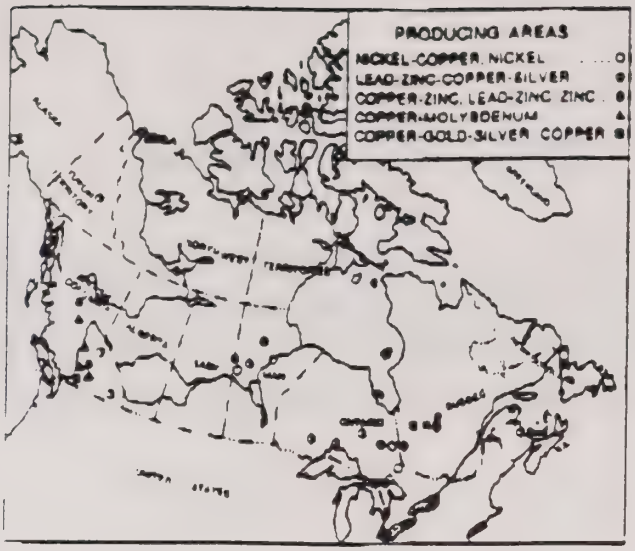
The Trends

Canadian explorationists are facing an increasingly complex regulatory regime

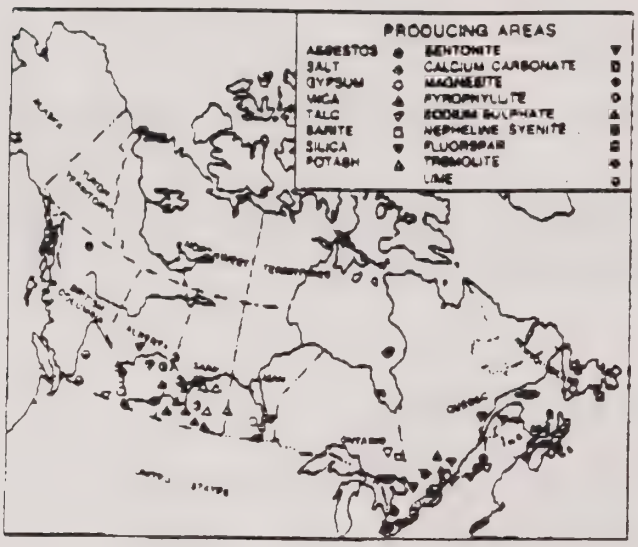
Today's prospectors and explorationists seeking Canada's future mineral discoveries face a new set of obstacles to their work, including:

- Conflicting environmental jurisdictions
- A complex maze of environmental regulations
- Multiple levels of operating regulations
- Uncertainties with respect to land access
- Negative tax treatment of risk capital

Figures on exploration activity in this country indicate that fewer individuals and companies are willing to tackle these obstacles. Investment in exploration has dropped dramatically over the past year confirming that the negative trend which began in 1989 is continuing (Figures 3A, B). The decline in investment is resulting in an equally dramatic downturn in exploration activity that is reflected in PDAC national statistics on claim staking, airborne geophysics and diamond drilling (Figure 4). A report from the Canadian Diamond Drilling Association refers to the current drop in activity as "calamitous". These trends are particularly serious given the long-term decline in base metal reserves which began almost a decade ago (Figure 5).











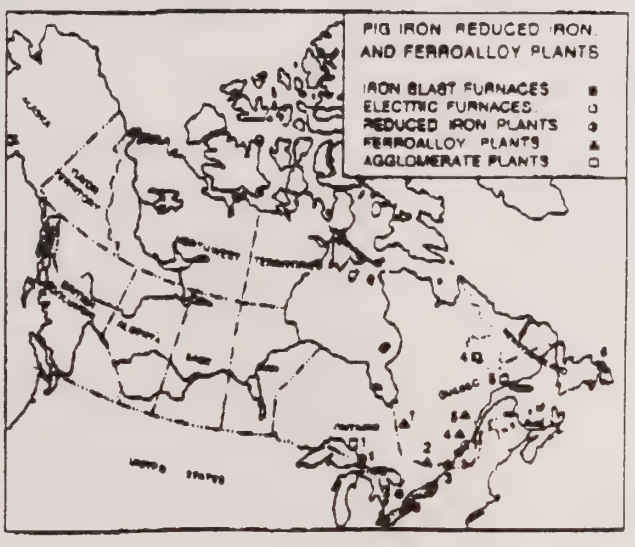


FIGURE 1: PRODUCING REGIONS OF CANADA

Source - Mining Association of Canada

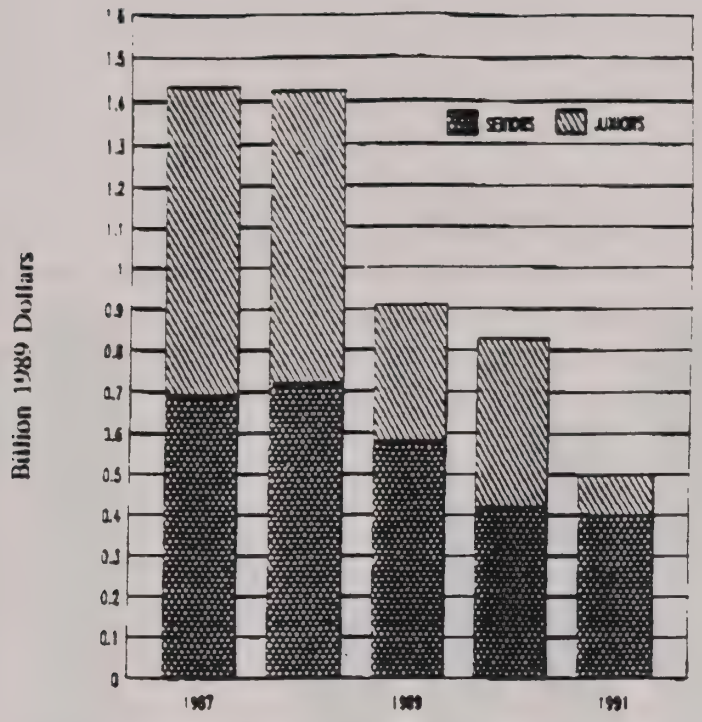
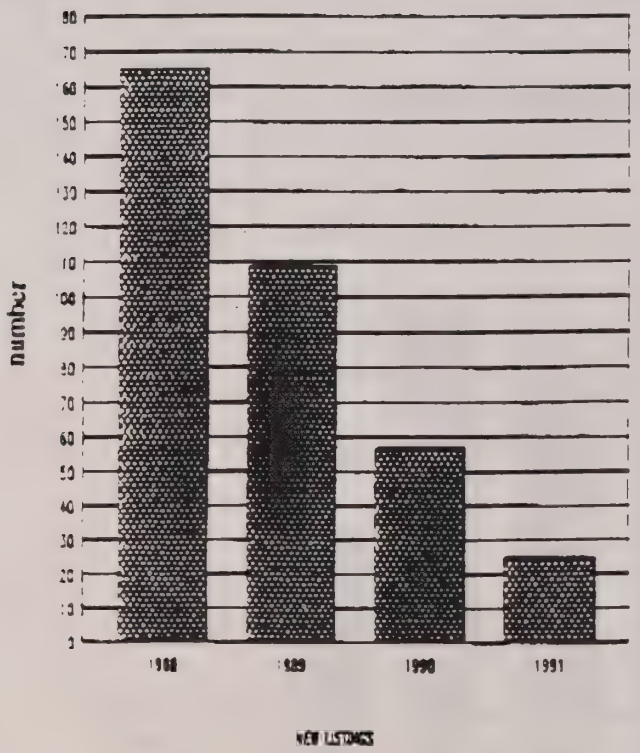


FIGURE 3A: TOTAL EXPLORATION EXPENDITURES

Data from Energy, Mines and Resources Canada, 1991.
The 1991 figure is a PDAC estimate.



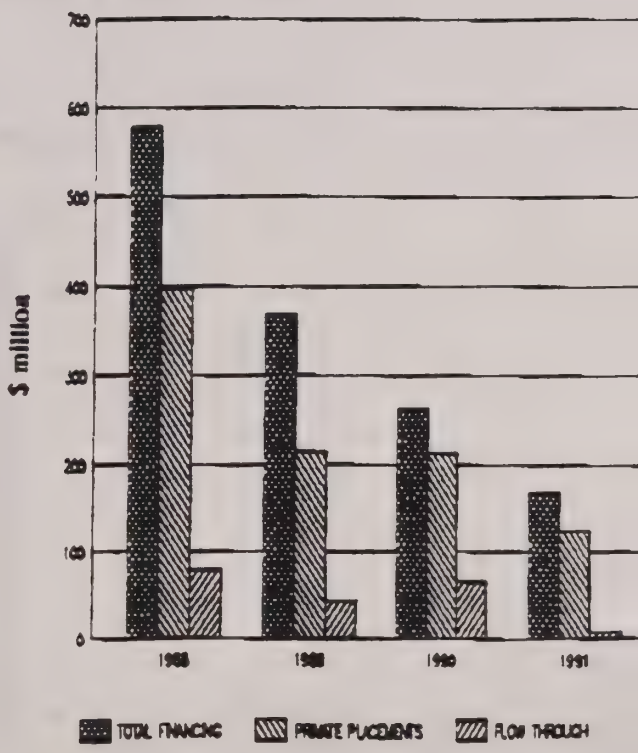


FIGURE 3B: VANCOUVER STOCK EXCHANGE FINANCING

(January - June). VSE Bulletin

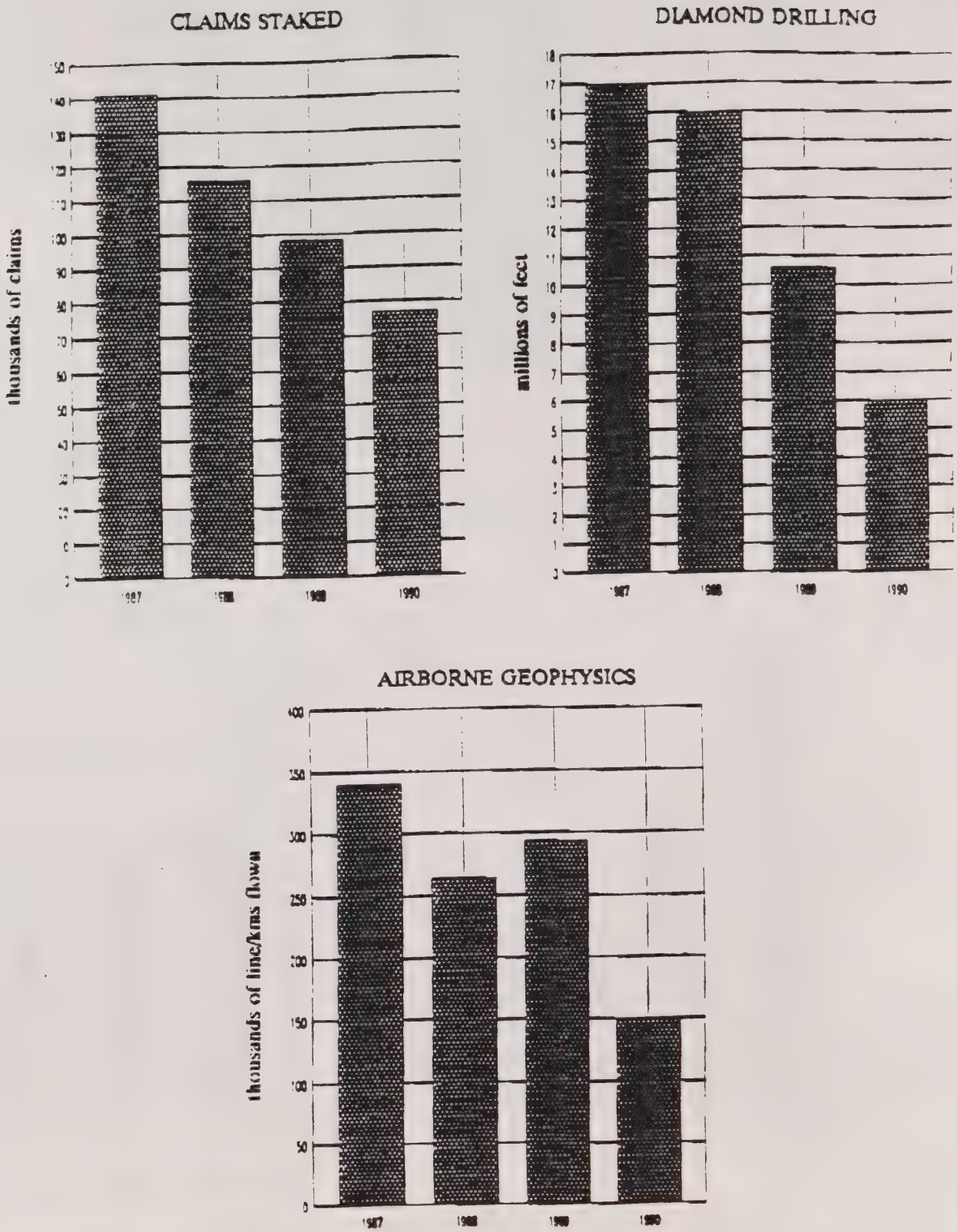


FIGURE 4: NATIONAL EXPLORATION ACTIVITIES

Data derived from the PDAC National Exploration Data Base.

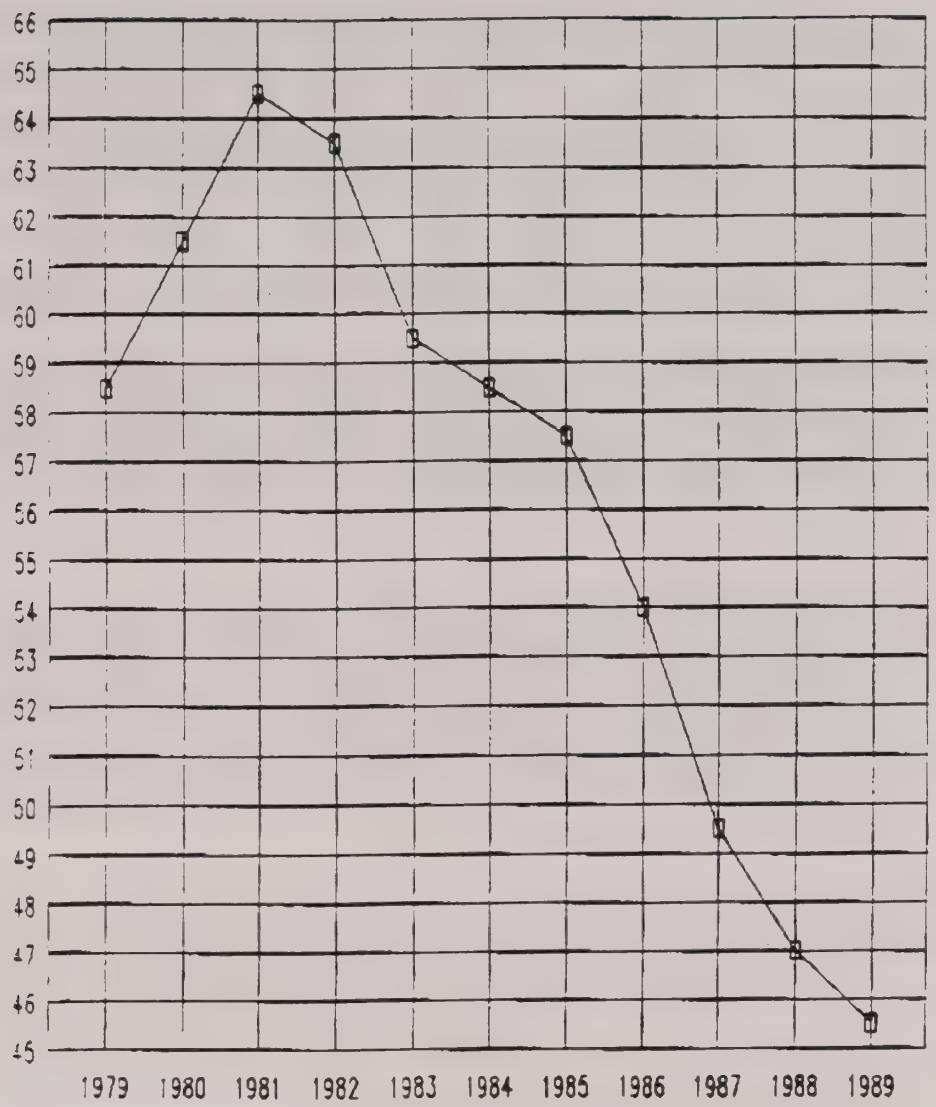


FIGURE 5: CANADIAN RESERVES, 1979-1989

Quantities of metals contained in proven and probable mineable ore in operating mines and deposits committed for production as at January 1, 1989. (1989 Canadian Minerals Yearbook, Energy, Mines and Resources Canada).

Most of the exciting discoveries that have been reported over the last few years and which are now being developed were financed by the sale of flow-through shares and supported by grants under the Canadian Exploration Incentive Program.

However, with the declining exploration investment in Canada, we are faced with the reality that these discoveries will not be enough to replace the half billion tons of ore we mined last year, nor do they give assurance of continuing employment to the 380,000 people engaged in mining and metal manufacturing.

Current fiscal policies are detrimental to Canada's competitiveness

There are additional adverse factors which are imposing a negative influence on business and investment in general. In this respect, two policy decisions by the Bank of Canada have been highly detrimental to the global competitiveness of the mineral industry.

In 1990, Canada's central bank was the largest seller of gold bullion in the entire world at 1.34 million ounces (50 tons). The Bank of Canada sold this gold in direct competition with Canadian mining companies. These sales undermine our efforts to create additional demand for the metal, diminish the potential for maintaining and increasing production, and thus erode employment and regional economic development opportunities.

The decision to manipulate the exchange rate at 0.87 U.S. has had even more discouraging consequences. This is reflected in a recent Price Waterhouse report on the mining industry in British Columbia, which estimates that for every 1-cent increase in the value of the Canadian dollar, the mining industry in that province experiences a $25 million loss in revenue.

The stated "intent" of the high dollar - high interest rate policy of the Bank of Canada is to fight inflation. This policy is not working. Our studies show that among all of the leading industrial nations, Canada has one of the highest inflation rates. Worse still, we have the highest growth in unemployment, the largest drop in retail sales, and our Gross Domestic Product is declining.

Another major factor in the competitiveness of our mining industry is the high rate of taxation. We are witnessing tax reductions in other nations, as shown in Appendix A. To be competitive, we may need to follow suit.

Foreign countries change mining laws to attract investment

While regulatory constraints and current fiscal policies continue to discourage mining investment in Canada, other countries are becoming increasingly hospitable towards investment in their mining industries. In our brief to you last year, we pointed out that several countries were changing the rules to encourage mineral investment. We can report more of these initiatives. In June, for example, the government in Greenland announced new rules concerning mineral exploration and development in that country. The intent of the new regulations is stated as follows: "to create a more receptive environment than in the past by providing: a) stability and security of tenure; b) competitive conditions; c) easy access to geological information".

New mining regulations in Mexico now allow foreign investors to control 100% (rather than 49%) of mining ventures for up to 12 years from the first sale of mineral products. Bolivia has announced a new mining law, considered to be one of the most attractive in Latin America. The new law opens up high potential border areas previously closed.

These examples represent the kinds of changes being made outside Canada and the inducements being offered to attract exploration and investment activity elsewhere. Additional examples are listed in Appendix A.

Canadian exploration companies are increasing their activities outside Canada

Canadian companies are responding to new laws in other countries in which risk and uncertainty are being supplanted by greater security of title and new opportunities for investment. According to a survey published recently by the Society of Economic Geologists,

> *"Mineral exploration by U.S. companies, as measured by average expenditures per company, increased approximately 8 percent in the United States, decreased approximately 50 percent in Canada, and increased 25 percent elsewhere in the world between 1988 and 1989. By comparison, average expenditures per company of the reporting Canadian companies roughly doubled in the United States, decreased by 20 percent in Canada, and increased by 200 percent elsewhere in 1988 and 1989".*

Figures compiled by Ainsworth-Jenkins Holdings Inc., a Vancouver-based consulting firm, indicate that out of the approximately 30 foreign companies now active in Mexico, 23 are Canadian. In Chile, where seven out of ten of the world's major mining projects are now underway, 82.6% of the $491 millions of mining investment spent in 1990 came from Canada.

Canadian companies are welcome and encouraged overseas. As a world leader in exploration and mining technology, the Canadian mineral industry and its service industries have a level of expertise which is recognized worldwide.

A decrease in Canadian exploration has serious implications

Canadian mining companies have been investing in resource development in other countries for many years. However, it should be recognized that their ability to do so has been based largely on the financial strength of the mineral industry in this country. It is here at home where skills are acquired and resources generated.

We believe that global diversification is a sound strategy for our industry, but not at the expense of growth in Canada. If we neglect our domestic industry, we lose employment opportunities and stimulation of local economies. Further, we do not create new mines in Canada.

Canada is still one of the most promising countries in the world for mineral discovery because it offers the following combination of conditions and attributes:

- One of the largest inventories of favourable geology in the world
- Highly skilled exploration professionals
- A vital and experienced community of prospectors
- Expert miners
- Leadership in technology
- Highly developed service industry
- Political stability

These advantages are now being outweighed by our development of a complex regulatory regime and a lack of incentives for investment in exploration and mining. These are two of the most important factors contributing to the current downturn in exploration and which continue to frustrate our ability to replenish our declining ore reserves. Canada is perceived as having multiple and often conflicting environmental rules with a focus on the mining industry.

The longterm implications of these trends are most serious. A drop in reserves soon leads to a drop in production rates. Failure to find more mineral deposits leads to a drop in Canada's exports and the erosion of our ability to compete effectively in world markets.

There is an almost unlimited potential for the discovery of new mines in Canada. However, we do not have an inventory of profitable mineral deposits sufficient to replace the mines we are depleting.

Maintaining its competitive edge internationally is vital to Canada's economy

The economist, Richard Lipsey, said recently that competition has shown itself to be the most efficient way to generate the dynamism that creates and increases a nation's wealth. The federal government has recognized this principle in the recently publicized discussion paper, Prosperity Through Competitiveness. We firmly support any initiative that will stimulate Canada's competitiveness on the world scene. We believe that any strategy to enhance a country's competitiveness is most likely to succeed if it is based on the inherent skills and resources at that country's disposal.

Canada's abundant natural resources provide the basis for our competitiveness. Our mineral industry can and must be allowed to become a lead player in the global competition.

Public policy must recognize the necessity for a strong Canadian mineral industry

A central policy recommendation in Prosperity Through Competitiveness is a move away from natural resources and towards "high-technology" industries. This means moving Canada in the direction of the perceived 'growth industries,' those driven by innovation and technology - computers and semiconductors; instrumentation; biotechnology and medical fields; and communications. Canada can boast a small number of world-class, high-technology companies. However, we must realize that even with major investment in research and development, our entry into the high-tech race will be running well back. In general, Canada is not ready to enter markets which are already characterized by mature, established players backed by significant capital, expertise and manufacturing capability.

We believe that Canada's optimum strategy is to stay out of those fields in which we lack any potential advantage, but to capitalize on our strengths, that is, on our long-established and recognized ability to supply the products that the world demands. We must follow the example of countries such as Germany and Japan by concentrating on our natural endowment and on what we do well.

In this regard, we would like to point out that the Canadian mineral industry is responsible for the development and application of the latest technology. Our knowledge and experience in exploration techniques, geoscientific concepts, geophysical instrumentation, underground mining and smelting methods are well established and in constant demand around the world. Canada is one of the leaders in the business of exporting technology and expertise.

The majority of nations with limited natural resources will provide markets for our mineral industry. As well, sales opportunities for mineral products will expand as metals consumption rises throughout the world, particularly in newly industrialized countries.

Government support for the mineral industry must be unequivocal

In 1987, the Government of Canada set the following six diverse objectives for its mineral policy:

a. to provide a fair and balanced fiscal and regulatory framework;

b. to foster the development of the minerals and metals sector as a foundation for regional economic development;

c. to promote improved technological performance and increased international competitiveness in all facets of the industry;

d. to assist workers and communities affected by industrial adjustment;

e. to facilitate enhanced mineral and metal exports and access to new and traditional markets: and

f. to provide timely and accurate economic, technical and scientific information required by the industry and by the federal and provincial governments, labour and the general public.

These objectives reflect merely a care and maintenance attitude towards the mineral industry. What is required is a policy built around a clear, unambiguous statement of support for the central role that the mineral industry plays in the Canadian economy.

Canada - the world's leading supplier and consultant of choice for global markets

There will always be a global market for mineral commodities and related technology and expertise - this is guaranteed. As resource-rich countries turn to their natural endowment to stabilize and stimulate their economies, the market will become increasingly competitive - this is also guaranteed. However, Canada has the capability to maintain its role of principal commodity supplier and mineral technology advisor for traditional and new high-technology industries throughout the world.

Summary and Conclusions

A strong and competitive mineral industry is vital to Canada's economic future. However, our base metal reserves have been in decline for almost a decade and new exploration activity is currently experiencing a serious downturn. In order to remain competitive and realize our potential in the global metal marketplace, we must devise a long-term strategy which is aggressive and creative. Certain steps need to be taken now in order to initiate this process. They are as follows:

1. Canada must have in place a mineral policy which reflects a clear and unequivocal political mandate to expand the mineral industry.

   Canada's embarrassment and reticence about its reliance on natural resources is self-effacing and unnecessary. All federal, provincial and territorial governments should acknowledge and salute with pride and confidence, the contribution of the natural resource industries to the Canadian economy, an attitude which should be reflected in public policy, public statements and future strategies.

2. The federal government must review its policies on taxation and financial incentives. This is the area which has the greatest potential impact on Canadian mineral exploration.

   Canada's resource base and mineral exploration are declining, while external investments by Canadian mining companies are increasing.

3. We must build on Canada's current strength of being the most efficient, technologically advanced, environmentally responsible commodity supplier and mineral technology advisor of the world.

4. The policies of the Bank of Canada must take account of the realities faced by natural resource industries.

5. Governments must create a clear, coordinated and pragmatic set of rules and regulations which will eliminate jurisdictional overlap, enhance compliance and foster rather than discourage investment. The current regulatory regime is complicated and excessive and the refusal of governments to set priorities has resulted in excessive environmental costs to the mining industry.

6. Canada must recognize that our future prosperity depends on expansion of our resource industries. There is an attitude developing among government policy makers which suggests that the use of natural resources is old fashioned and should be replaced by new, high-technology industries. This is unrealistic and dangerous and should be dropped. Strategies for stimulating and improving Canada's economy and global competitiveness must be founded on our inherent strengths and natural endowments - that is, our natural resources.

APPENDIX A

Examples of Changing Mining Regulations in Foreign Countries [1]

Bolivia

Bolivia has introduced a new mining law, considered to be one of the most attractive in Latin America. It is expected to increase annual U.S. investment 12-fold to $300 million. Most significantly, it opens up to foreign joint ventures high mineral potential border areas previously closed. Mining taxes are 2.5% on net sales, applicable against a 30% profits tax, with re-investment profits being tax exempt. Small companies and cooperatives will be tax exempt until 1999 (Mines and Minerals Weekly Bulletin, Vol. 2, no. 21).

Chile

Mining activity in Chile has received special treatment due to its strategic importance to the economy. Chile is the world's leading copper producer and minerals account for 50% of exports. Most legislation regarding land use and mining is geared to benefit the mining industry (World Mineral Notes, September 1989). The Mining Code of Chile (Law No. 18, 248, 1983) states that anyone may acquire mining rights pursuant to chapters one and two of the Mining Code, which right may be maintained by payment of annual tax (Northern Miner Magazine, Summer 1991).

The government is considering new incentives such as flow-through shares in addition to the current favourable rights granted to investors. Under Foreign Investment Contracts negotiated with the government, foreign investors enjoy the following rights: to remit or

---

[1] This listing is of specific examples and is not intended to be complete.

re-invest earnings yearly and without limits, and to remit capital after three years; to opt for a fixed tax rate instead of national tax treatment for the first ten years (which may be negotiated for up to twenty years for mining projects in excess of $50 million), with a one-time option to waive the fixed tax rate and become subject to national treatment; to acquire foreign currency at the best rate of exchange that may exist at the time of purchase in order to remit profits and capital; to carry books in U.S. dollars; to receive legal and regulatory treatment similar to that accorded to all other investors; to obtain invariability of tariffs, sales taxes and service taxes; to freely export product, subject to terms stipulated in the foreign investment contract; and to establish offshore accounts to return and liquidate income derived from exports (for investments over $50 million). The overall effective tax rate is also quite favourable at 35 percent of income.

Columbia

In December 1990, Colombia's Congress approved one of the largest reform packages in the country's history, affecting everything from labour to foreign exchange and tax laws. The wide ranging reforms accelerate President Cesar Gaviria Trujillo's program to open the country's economy and eliminate restrictive regulatory practices. The reforms are especially beneficial to local and foreign investors. Foreigners are now guaranteed the same rights as those granted the local business community (Mineral Policy Sector International Communique, January 18, 1991).

Costa Rica

100% foreign ownership of exploration and exploitation permits is now allowed (Northern Miner Magazine, Summer 1991).

Greenland

In June 1991 the Premier of Greenland announced new rules for foreign companies concerning the exploration and development of mineral and hydrocarbon resources in Greenland. Features of the new legislation include: a) abolition of the requirement that the Greenland Home Rule and Danish governments be partners; b) modifications to tax legislation, with company tax lowered to 35%; c) recognition of potential double taxation problems, and where no double taxation agreement exists to ensure that a foreign company does not pay twice; d) establishment of an office to provide information to and assist foreign exploration firms (letter dated July 12, 1991, from Canadian Embassy).

Mexico

The Mexican government introduced major modifications to its mining code in December 1990. The new regulations, aimed at stimulating larger capital investments, new exploration activities and diversification in mineral production, will allow foreigners to effectively control 100% of local companies for up to 12 years from the first sale of mineral products by that company. Previously, they could purchase a maximum of only 49%. A reduction in the top marginal tax rate to 35% from 60%, combined with the Mexico-U.S.-Canada Free Trade talks are also catching the attention of international mining concerns (Northern Miner, July 1, 1991)

Mongolia

The Mongolian Government has adopted a foreign investment law and is drafting a mining law to formalize rights, licences and royalties. After more than 70 years of socialist rule, the Mongolian People's Republic is opening up to the West to help transform its economy. In one development, the Mongolian Geological and Geophysical Exploration Co. of Ulaanbaatar entered into a joint venture with Earth Satellite Corp. of Maryland to develop and distribute detailed geologic information and exploration licences (Northern Miner, August 12, 1991).

Peru

Having recognized that foreign mining companies with the financial muscle to make an impression need attractive incentives, Peru's president declared a state of emergency for the mining industry. Measures introduced so far include tax breaks, privatization plans for the iron ore sector and calls for exchange- and interest-rate reform (Mines and Minerals Weekly Bulletin, May 13, 1991).

Romania

The Romanian Department of Geology has provided information on two deposits with a view to attracting foreign investment interest (Mineral Policy Sector, International Communique, January 11, 1991).

USSR

The Ministry of Metallurgy is reorganizing with important implications for the mining industry of the USSR. The Mining Division's responsibility for production (i.e. ownership of mines) will gradually be phased out in stages, eventually reducing to zero. Mines will probably eventually be set up as joint stock companies, including the possibility of foreign ownership of up to 100%. The law that would permit this, although in the works, has not yet been passed (Infomac, July 1991).

Moves are afoot in the Soviet Union to make the terms of investment more attractive for foreigners, with special emphasis on providing a favourable investment climate in the Soviet Far East. In December 1988 the USSR Council of Ministers issued a resolution "On Further Measures to Develop the External Economic Activities of State-Run Establishments, Cooperatives and Other Non-Governmental Entities." It provides that the joint ventures set up shall be exempt from the tax on profits for the first three years of operation, with this tax to be reduced to 10%, and the procedures of profit repatriation to be eased (World Mineral Notes, January 1990).

Vietnam

In August 1989 Vietnam passed an "Ordinance of Mineral Resources" which provides a general framework for mineral development. Although the ordinance lacks the specificity of a mining code, experience to date clearly indicates that the government is ready to negotiate operating conditions that will compare favourably with conditions offered in other countries, including Canada (Mineral Policy Sector, Weekly International Communique, August 3, 1990).

Zimbabwe

In May 1989, the Zimbabwe government issued a new investors guide entitled "The Promotion of Investment: Policy and Regulations." The guide aims at promoting investment in the agricultural, industrial, mining and commercial sectors of the economy (letter from Zimbabwe consulate, August 1989).

APPENDIX B

KEY ECONOMIC INDICATORS: CHANGE OVER 1990

(Source - The Economist)

	GNP	RETAIL SALES	CHANGE IN UNEMPLOYMENT
JAPAN	+ 5.9	+ 2.1	- 0.1
GERMANY	+ 5.2	+ 8.0	- 1.0
HOLLAND	+ 4.7	+ 1.8	- 0.5
BELGIUM	+ 4.0	- 0.8	+ 0.5
SPAIN	+ 2.7	+ 10.2	- 0.5
ITALY	+ 1.11	- 4.2	0
FRANCE	+ 0.9	- 1.8	+ 0.7
SWITZERLAND	- 0.3	- 0.8	+ 0.6
SWEDEN	- 0.4	- 3.5	+ 1.1
AMERICA	- 0.6	- 0.9	+ 1.8
AUSTRALIA	- 1.5	- 1.6	+ 2.6
BRITAIN	- 2.4	- 3.2	+ 2.2
CANADA	- 2.8	- 11.4	+ 3.0

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L'importance de l'industrie minière pour le Canada

L'Association canadienne des prospecteurs et entrepreneurs

HALIFAX (Nouvelle-Écosse)
Du 22 au 24 septembre 1991

VEUILLEZ NOTER

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L'IMPORTANCE DE L'INDUSTRIE MINIÈRE POUR LE CANADA

Mémoire présenté par

l'Association canadienne des prospecteurs et entrepreneurs

à la

48e Conférence des ministres des mines
Halifax (Nouvelle-Écosse)
Le mardi 24 septembre 1992

TABLE DES MATIÈRES

INTRODUCTION 1

LA SITUATION ACTUELLE 1

- L'importance de l'industrie minière pour les exportations 1
- Contribution de l'industrie minière au Canada 2
- Les ressources naturelles - le pivot de l'économie 3
- Exploration et compétitivité internationale 4

LES TENDANCES 4

- Contexte réglementaire sans cesse plus complexe 4
- Orientations fiscales négatives 5
- Pays étrangers attirent les investisseurs 6
- Les sociétés canadiennes accroissent leurs activités à l'extérieur du pays 6
- Baisse de l'exploration canadienne 7

LES OBJECTIFS 8

- Conserver la compétitivité du Canada 8
- Politique d'intérêt public - reconnaissance de l'industrie minière 8
- Appui gouvernemental à l'industrie minière 9
- Le Canada - premier producteur mondial et expert-conseil 10

RÉSUMÉ ET CONCLUSION 11

ANNEXE A

- Exemples de la modification de règlements miniers à l'étranger

ANNEXE B

- Indicateurs économiques clés : Changement en 1990

L'IMPORTANCE DE L'INDUSTRIE MINIÈRE POUR LE CANADA

Introduction

L'Association canadienne des prospecteurs et entrepreneurs profite avec plaisir de l'occasion pour présenter aux ministres fédéral et provinciaux des mines les points de vue de l'industrie canadienne de l'exploration et de l'exploitation minières.

Dans le présent mémoire, nous traitons du thème de la conférence, soit "L'importance de l'industrie minière pour le Canada", en examinant d'abord la précieuse contribution permanente de l'industrie à la prospérité du pays et des Canadiens. Nous examinons également le rôle du Canada au sein d'un monde dans lequel la compétition entre pays commerçants devient plus féroce, les barrières commerciales sont levées et les blocs commerciaux sont en plein essor. À la lumière de ces événements internationaux, nous recommandons que le Canada élabore et poursuive une stratégie économique qui nous permettra de devenir plus compétitifs. Nous devons, entre autres, tirer profit des points forts et des aptitudes industriels du pays. L'industrie minière est l'une de nos plus solides industries.

Le Canada a la chance de jouir de riches ressources minérales qui n'ont pas encore été découvertes et exploitées. Ce n'est que grâce à ses ressources naturelles que le Canada pourra conserver sa position sur les marchés internationaux et son niveau de vie, réduire le déficit national et subventionner les programmes sociaux et environnementaux qui sont actuellement prioritaires.

La situation actuelle

L'industrie minière est à l'origine de 18 % des exportations canadiennes

L'exploitation minière est d'une importance capitale pour l'économie canadienne. Pour survivre, le Canada doit commercer. Notre prospérité est sérieusement tributaire de notre compétitivité. Le quart de notre PNB et le cinquième de nos emplois dépendent des exportations.

TABLEAU 1

INCIDENCE DE L'EXPLOITATION MINIÈRE
SUR L'ÉCONOMIE RÉGIONALE :
QUELQUES EXEMPLES PRÉCIS

	Yellowknife T. N.-O.	Hemlo Ont.	Brunswick N.-B.
Démarrage de la production	1938	1985	1964
Emplois	804	1 177	2 081
Salaires et avantages, 1990	53 M $	86 M $	76 M $
Dépenses, 1990; Biens, services et matériel	63 M $	138 M $	169 M $

En 1990, les quatre étapes de l'activité minière, soit l'extraction minière et la valorisation, la fusion et le raffinage, la semi-fabrication de minerais et de métaux et la fabrication de métaux, ont représenté dans l'ensemble 22,8 milliards de dollars de l'économie canadienne et 18 % de nos recettes totales dues à l'exportation. La valeur de la production de minerais est de 680 dollars par habitant au Canada par rapport à 50 dollars aux États-Unis.

L'exploitation minière a fortement contribué au développement du Canada

Les ressources naturelles ont toujours été à l'origine de la prospérité de toutes les régions du Canada. En raison de l'urbanisation intensive de notre société, nous oublions souvent la véritable source de notre prospérité.

L'exploitation de la mine Sullivan en Colombie-Britannique et la construction de la fonderie de Trail ont fait du Canada le premier producteur de zinc au monde, et d'autres découvertes importantes, comme à Brunswick au Nouveau-Brunswick, à Kidd Creek en Ontario, à Matagami au Québec, à Flin Flon au Manitoba, à Buchans à Terre-Neuve, à Faro au Yukon ainsi qu'à Polaris et à Nanisivik dans les Territoires du Nord-Ouest, perpétuent cette situation. En ce qui concerne l'extraction et la fusion du nickel, le Canada domine depuis presque cent ans à la suite des découvertes de minerais dans le bassin de Sudbury. Les découvertes à Thompson au Manitoba et à Raglan au Québec continuent de faire du Canada le premier producteur de nickel au monde.

La découverte et l'exploitation de gisements aurifères importants en Colombie-Britannique, au Yukon, dans les Territoires du Nord-Ouest, dans le bouclier canadien et dans la région des Appalaches ont permis aux Canadiens de développer des régions isolées de notre vaste pays. Les mines sont maintenant à la base de l'économie de quelque 115 collectivités canadiennes (tableau 1, figure 1). L'exploitation de la potasse en Saskatchewan et au Nouveau-Brunswick a permis au Canada de se hisser parmi les principaux producteurs de fertilisants. Les mines de fer du Québec et du Labrador ont favorisé la croissance économique du Canada et ont été à l'origine d'une bonne part du transport maritime qui a justifié la construction de la voie maritime du Saint-Laurent. Huit de nos dix provinces ont été d'importants producteurs de cuivre.

La compétence que les Canadiens ont acquise au cours de ces longues années d'exploitation minière a contribué à faire du Canada un chef de file en matière de technologie. La demande mondiale de notre expérience et de notre compétence est bien

connue. Une analyse récente du magazine new-yorkais Energy News Record place le Canada en troisième position (après les É.-U. et la Grande-Bretagne) du point de vue de l'exportation d'une compétence technique. Les sciences de la Terre et l'exploitation minière y sont pour beaucoup.

Les ressources naturelles sont le pivot de notre économie

Les ressources naturelles représentent vingt cents de chaque dollar produit par les secteurs primaire et secondaire du pays. Lorsque l'on examine la productivité des travailleurs du secteur manufacturier canadien, nul besoin de chercher plus loin pour comprendre pourquoi ce secteur est en perte de vitesse (figure 2). Dans un rapport récemment publié, l'Organisation de coopération et de développement économiques a indiqué que le Canada a eu le triste privilège de présenter, entre mars 1990 et mars 1991, la plus forte chute du nombre d'emplois dans les secteurs manufacturier, de la construction et des services parmi les 24 pays membres.

Dans la conjoncture actuelle, seuls les manufactures et les secteurs commerciaux qui sont reliés à l'exploitation des ressources naturelles ont les meilleures chances de survivre.

Une étude du ministère des Finances de la C.-B. indique que le secteur des ressources est à l'origine de 25 p. 100 des emplois de la province, même s'il n'emploie directement que 15 p. 100 de la main-d'oeuvre. Le rapport signale que l'épuisement des ressources entraînerait une disparition de la plupart des emplois liés au secteur des services. Selon le rapport, bien que le secteur tertiaire a cru considérablement au cours des trente dernières années, il ne favorise pas, dans son ensemble, la croissance économique, contrairement aux secteurs qui dépendent des ressources naturelles.

En tant que Canadiens, nous devrons compter sur nos ressources naturelles pour conserver notre niveau de vie. Les ressources naturelles et leur exploitation constituent le seul moyen pour le Canada d'être compétitif sur les marchés internationaux. Les ressources naturelles sont à la source de notre prospérité.

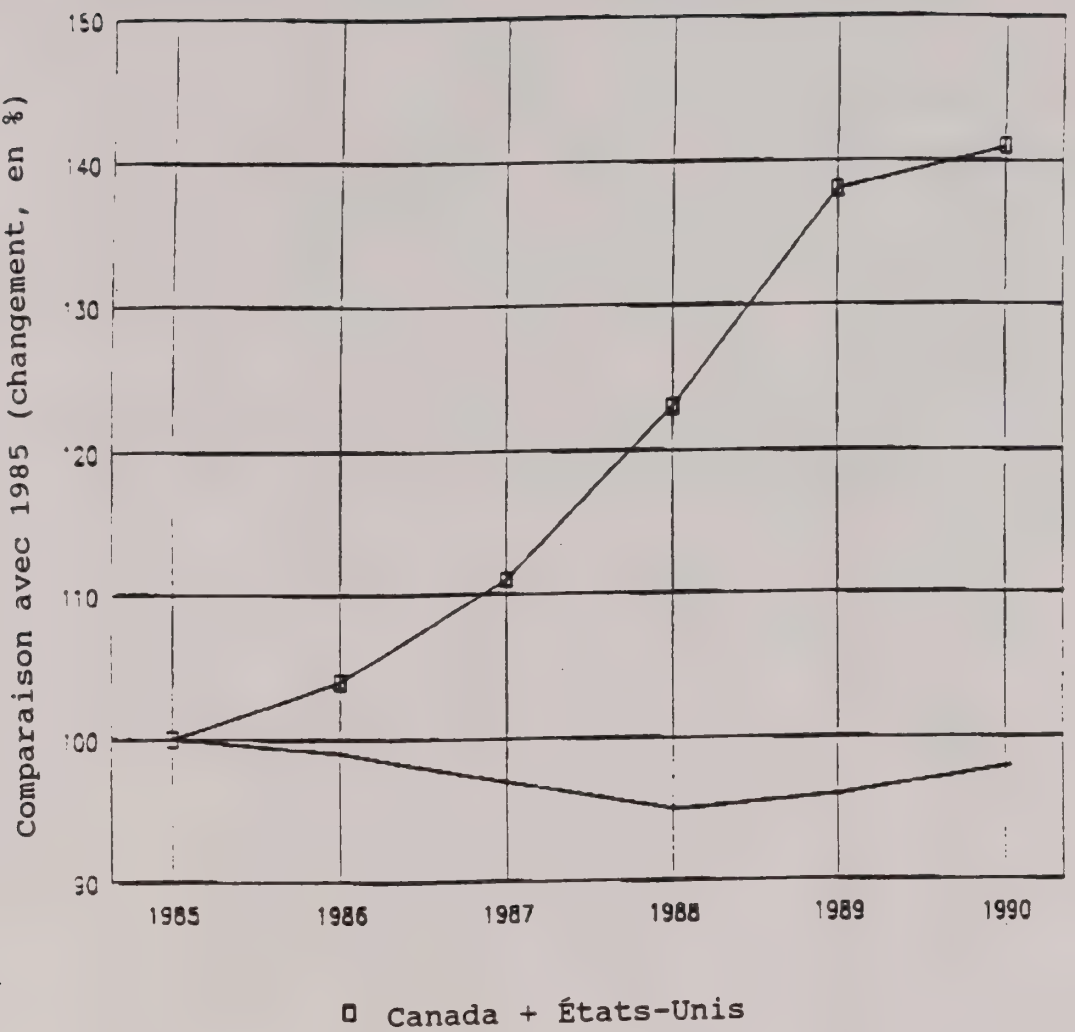


FIGURE 2: COÛT DE LA MAIN-D'OEUVRE DANS LE SECTEUR MANUFACTURIER
Source - The Economist

L'exploration est essentielle pour la compétitivité mondiale

L'industrie minière canadienne peut encore connaître une forte croissance. C'est le secteur de l'exploration qui déterminera si cette possibilité se concrétisera. Les découvertes sont la première étape cruciale avant de déterminer si les réserves justifient une exploitation. Il faut exploiter de nouvelles mines pour conserver notre taux de production et demeurer compétitifs.

Les tendances

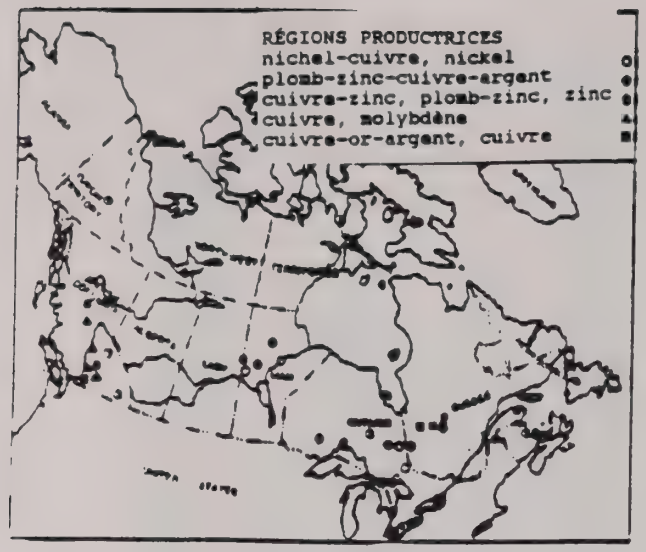
Les prospecteurs canadiens font face à une réglementation sans cesse plus complexe

De nos jours, les prospecteurs canadiens font face à un nouvel ensemble d'obstacles qui entravent leur travail, à savoir :

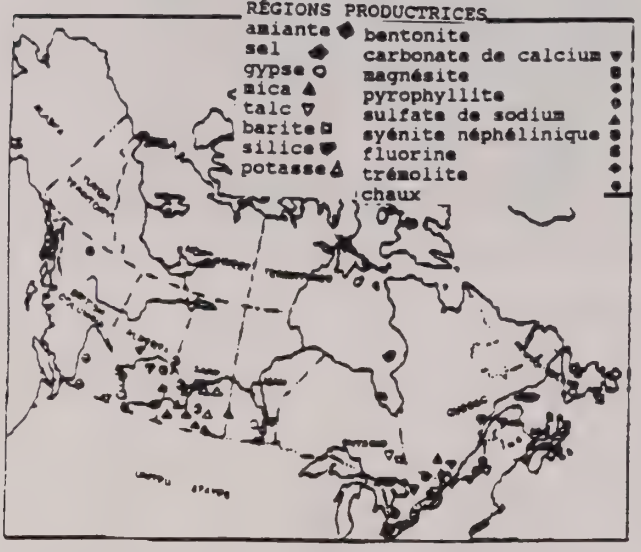
- compétences opposées en matière d'environnement;
- dédale complexe de règlements sur l'environnement;
- règlements à plusieurs champs d'application;
- accès incertain aux terrains;
- traitement fiscal négatif du capital de risque.

Les données sur l'exploration au pays indiquent que de moins en moins de personnes et d'entreprises sont prêtes à faire face à ces obstacles. Les investissements dans l'exploration ont chuté considérablement au cours de l'année, ce qui confirme la tendance négative qui s'est amorcée en 1989 et qui se poursuit (figures 3A et 3B). La chute des investissements engendre donc une baisse de l'exploration dont témoignent les statistiques nationales de l'ACPE sur le jalonnement des claims, la géophysique aéroportée et le sondage au diamant (figure 4). Un rapport de la Canadian Diamond Drilling Association qualifie de désastreux la baisse des activités. Ces tendances sont particulièrement sérieuses compte tenu de la chute à long terme des réserves de minerais communs qui s'est amorcée il y a près d'une décennie (figure 5).

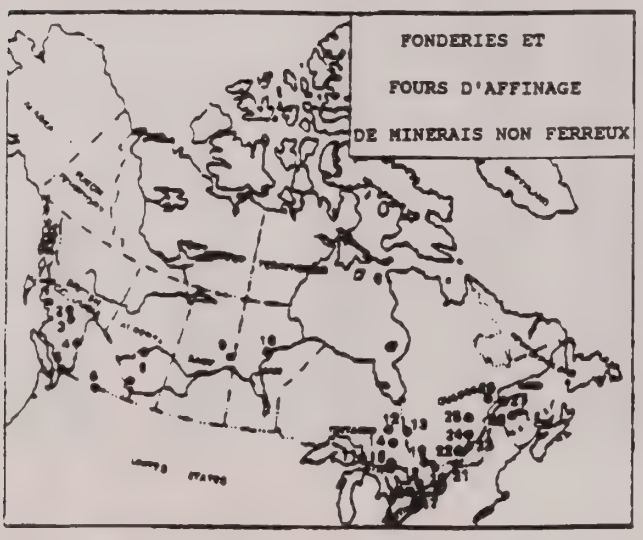
La plupart des découvertes excitantes qui ont été signalées au cours des dernières années et qui sont maintenant exploitées ont été financées par la vente d'actions accréditives et par des subventions dans le cadre du Programme de stimulation de l'exploration minière au Canada.

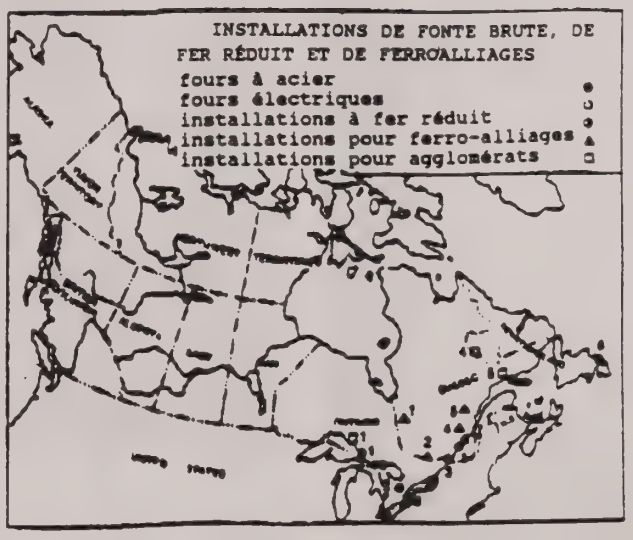












7. **FIGURE 1: RÉGIONS PRODUCTRICES DU CANADA**
Source - Association minière du Canada

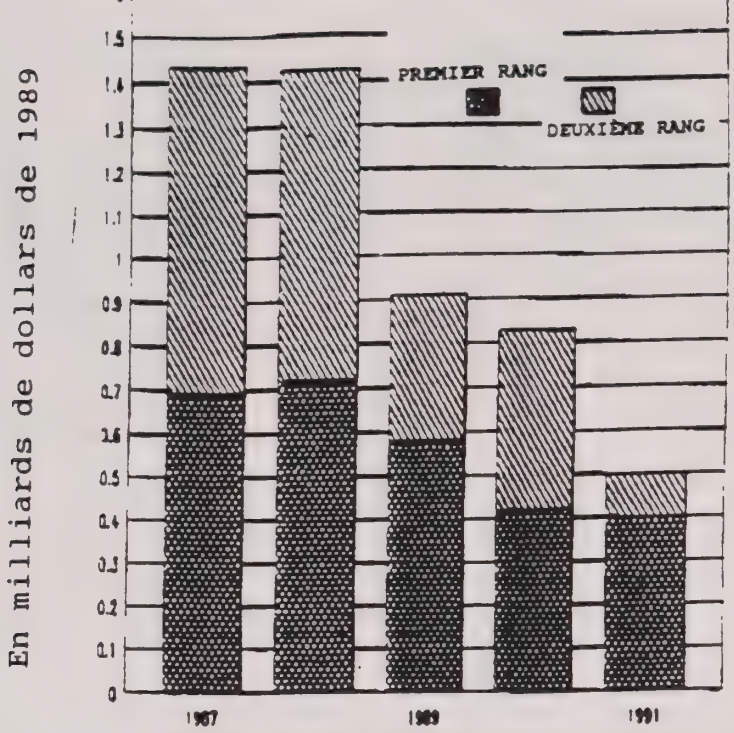
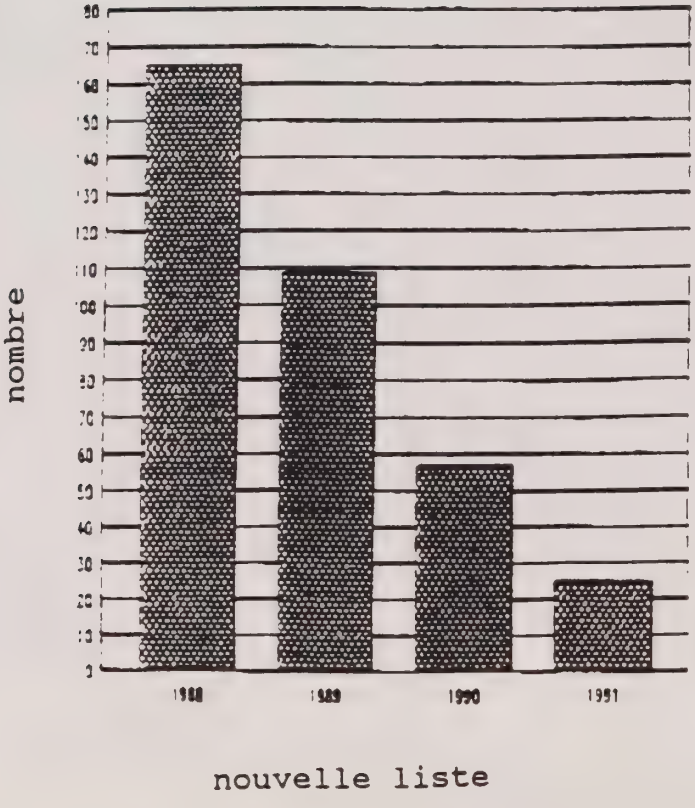


FIGURE 3A: DÉPENSES TOTALES POUR L'EXPLORATION
Source: Énergie, Mines et Ressources Canada, 1991
Les données de 1991 sont une estimation de l'ACPE.



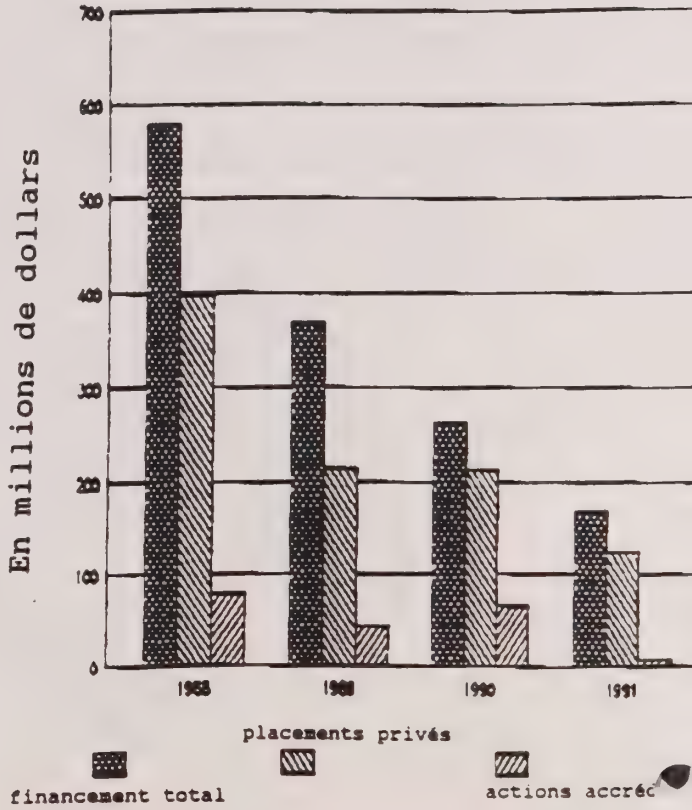
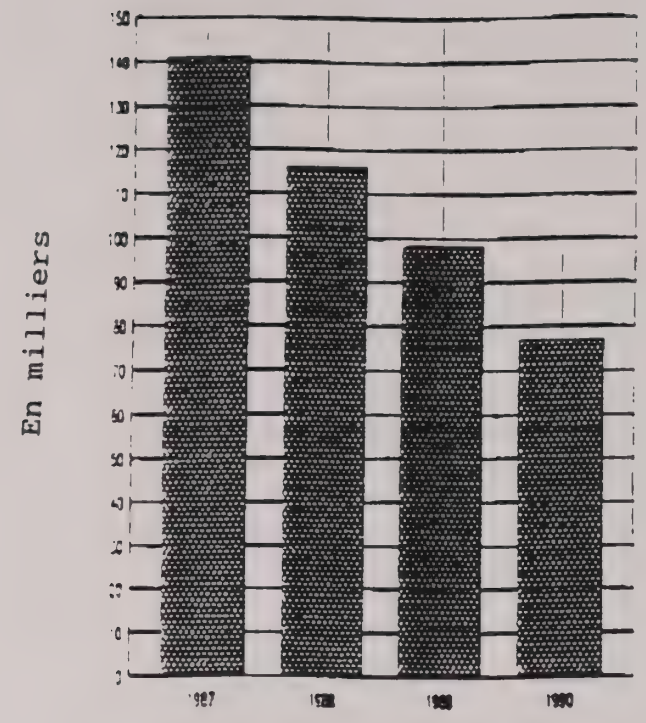
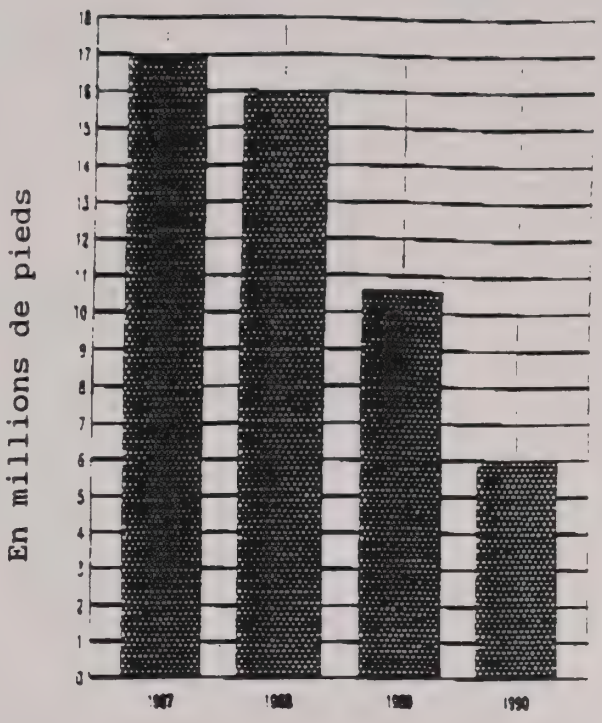


FIGURE 3B: FINANCEMENT À LA BOURSE DE VANCOUVER
(janvier - juin) Bulletin de la bourse de Vancouver

CLAIMS JALONNÉS



FORAGE AU DIAMANT



GÉOPHYSIQUE AÉROPORTÉE

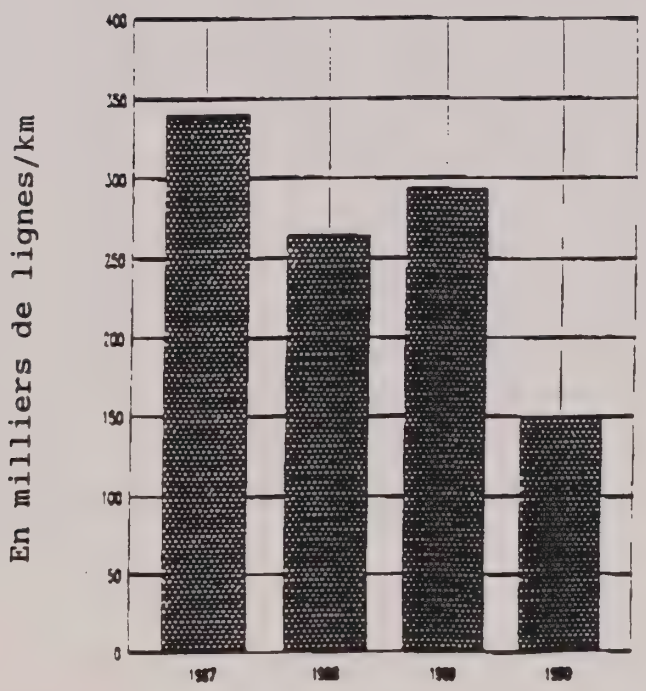


FIGURE 4: EXPLORATION AU PAYS

Données obtenues de la base de données sur l'exploration de l'ACPE. La distance forée au diamant est une estimation.

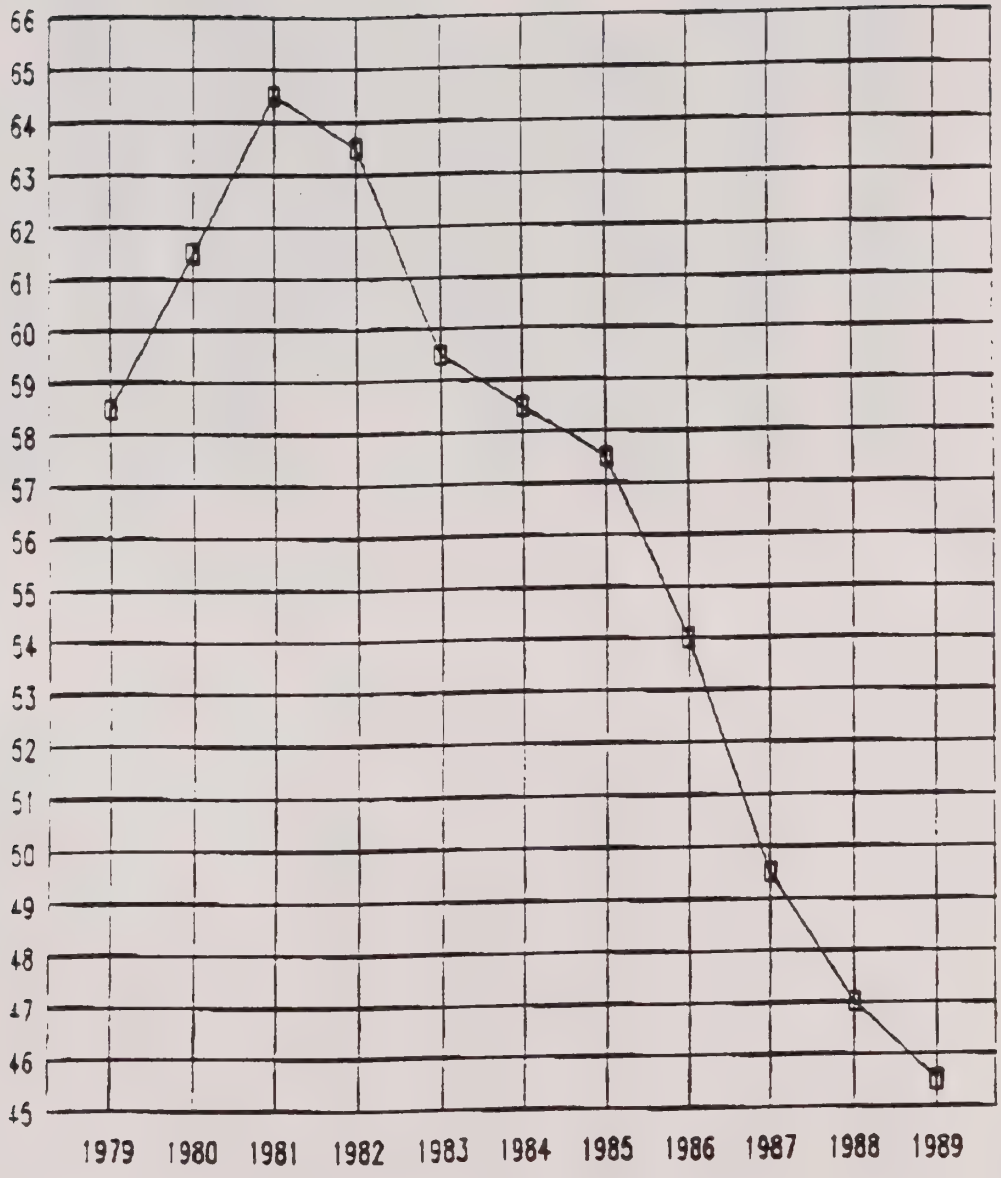


FIGURE 5: RÉSERVES CANADIENNES, 1979-1989

Quantités de métaux dans les minerais exploitables, prouvés et probables, des mines en exploitation et des réserves qui doivent être exploitées le 1er janvier 1989.
(Annuaire des minéraux du Canada, 1989, Énergie, Mines et Ressources Canada)

Compte tenu de la baisse des investissements dans l'exploration, nous devons toutefois nous rendre compte que ces découvertes ne suffiront pas pour remplacer les cinq cents millions de tonnes de minerais exploités l'an dernier et ne garantiront pas les emplois des 380 000 personnes qui travaillent dans les secteurs minier et de la fabrication du métal.

Les orientations fiscales en vigueur nuisent à la compétitivité du Canada

Il existe d'autres facteurs défavorables qui ont une influence négative sur les affaires et les investissements en général. À cet égard, deux décisions de principe de la Banque du Canada ont eu un effet désastreux sur la compétitivité mondiale de l'industrie minière.

En 1990, la banque centrale du Canada était le plus important vendeur d'or en lingot au monde (1,34 million d'onces ou 50 tonnes). La Banque du Canada a concurrencé directement l'industrie minière canadienne. Ces ventes nuisent à nos efforts qui visent à créer une demande additionnelle pour le métal, atténuent les possibilités d'un maintien et d'une hausse de la production, et érodent la création d'emplois et les possibilités de développement économique des régions.

La décision de fixer le taux de change à 0,87 US a eu des conséquences encore plus désastreuses. Un rapport récemment publié par la société Price Waterhouse sur l'industrie minière de la Colombie-Britannique estime que chaque hausse d'un cent du dollar canadien entraîne des pertes de 25 millions de dollars pour l'industrie minière de la province.

La politique du dollar et des taux d'intérêts élevés poursuivie par la Banque du Canada a pour "but" déclaré de juguler l'inflation. Cette politique ne fonctionne pas. Nos études indiquent que parmi tous les pays industrialisés dominants, le Canada a toujours l'un des taux d'inflation les plus élevés. Pis encore, nous avons le taux de chômage le plus élevé, la plus forte chute de la consommation et notre produit intérieur brut est en recul.

Le taux d'imposition élevé est un autre facteur qui nuit à la compétitivité de notre industrie minière. Ailleurs au monde, les taux sont réduits (voir annexe A). Pour être compétitif, il faudra peut-être en faire autant.

Des pays étrangers modifient les lois sur l'exploitation minière pour attirer les investissements

Bien que les contraintes réglementaires et les politiques fiscales en vigueur continuent de décourager les investissements dans le secteur minier canadien, d'autres pays adoptent des politiques opposées. Dans le mémoire que nous vous avons remis l'année dernière, nous avions signalé que plusieurs pays modifiaient leurs règlements pour attirer les investissements. Nous pouvons vous donner d'autres exemples. En juin, par exemple, le gouvernement du Groenland a annoncé de nouveaux règlements régissant l'exploration et l'exploitation minières. Ces règlements ont pour but de créer un milieu plus favorable que par le passé en procurant : a) une stabilité des baux accordés aux sociétés minières; b) des conditions compétitives; c) un accès facile aux renseignements géologiques.

De nouveaux règlements au Mexique permettent aux investisseurs étrangers de posséder 100 % (plutôt que 49 %) des entreprises minières pendant 12 ans à partir de la première vente de produits minéraux. La Bolivie a annoncé une nouvelle loi qui serait la plus intéressante en Amérique latine. La loi donne accès à des zones frontière qui étaient auparavant interdites.

Ces exemples donnent une idée des changements qui se produisent à l'étranger et des mesures qui encouragent l'exploration et l'investissement. On trouvera d'autres exemples à l'Annexe A.

Les sociétés d'exploration canadiennes accroissent leurs activités à l'extérieur du Canada

Les sociétés canadiennes réagissent aux nouvelles lois promulguées par d'autres pays dans lesquels les risques et l'incertitude sont remplacés par de meilleures garanties d'exploitation et de nouvelles occasions d'investissement. Selon une enquête publiée récemment par la Society of Economic Geology,

l'exploration minière par les sociétés américaines, évaluée par les dépenses moyennes de chaque société, a augmenté d'environ 8 p. 100 aux É.-U., a chuté d'approximativement 50 p. 100 au Canada et a augmenté de 25 p. 100 ailleurs au monde entre 1988 et 1989. Par contre, certaines sociétés canadiennes signalent que leurs dépenses moyennes ont près de doublé aux États-Unis, ont baissé de 20 p. 100 au Canada et ont bondi de 200 p. 100 ailleurs au monde entre 1988 et 1989.

Les données recueillies par la société Ainsworth-Jenkins Holdings Inc., des experts-conseils de Vancouver, indiquent que 23 des 30 sociétés étrangères qui oeuvrent au Mexique sont canadiennes. Au Chili, où sept des dix plus importants projets miniers au monde sont maintenant lancés, 82,6 p. 100 des 491 millions de dollars investis en 1990 provenaient du Canada.

Les pays étrangers accueillent avec plaisir les sociétés canadiennes. À titre de leader mondial en matière de techniques d'exploration et d'exploitation minières, l'industrie minière canadienne et l'industrie des services qui l'accompagne possèdent une compétence qui est reconnue partout au monde.

Une chute de l'exploration canadienne a de sérieuses répercussions

Les sociétés minières canadiennes investissent depuis bon nombre d'années dans la mise en valeur des ressources d'autres pays. Il faut cependant reconnaître que ces activités à l'étranger ont été poursuivies grâce surtout à la puissance financière de l'industrie minière au pays. C'est au Canada que les compétences sont acquises et les ressources produites.

Nous croyons qu'une diversification planétaire représente une stratégie saine pour notre industrie, mais non aux dépens de la croissance au Canada. Si nous négligeons notre industrie nationale, nous perdons des emplois et des occasions de stimuler les économies régionales. En outre, nous n'exploitons pas de nouvelles mines au Canada.

Le Canada demeure toujours l'un des pays les plus prometteurs en matière de découvertes minérales, car il présente les conditions et les caractéristiques suivantes :

- l'un des inventaires les plus importants au monde de ressources minérales;
- des professionnels très compétents de l'exploration;
- une collectivité vitale et expérimentée de prospecteurs;
- des mineurs compétents;
- une technologie de pointe;
- une industrie des services très développée;
- une stabilité politique.

Notre mise en place d'un système réglementaire complexe et l'absence d'encouragements à l'investissement l'emportent sur ces avantages. Ce sont les deux plus importants facteurs qui contribuent à la passivité actuelle de l'exploration et

qui nous empêchent de reconstituer nos réserves en déclin. D'aucuns estiment que le Canada adopte de nombreux règlements de protection de l'environnement, parfois contradictoires, qui visent l'industrie minière.

L'incidence à long terme de ces tendances est vraiment sérieuse. Une baisse des réserves aboutit vite à une baisse des taux de production. Lorsque l'on ne découvre pas de nouveaux gisements, nos exportations chutent et notre compétitivité internationale s'érode.

Les possibilités de découverte de nouvelles mines sont presque illimitées au Canada. Cependant, nous ne possédons pas un inventaire suffisant des gisements rentables pour remplacer les gisements qui s'épuisent.

Les objectifs

Il est primordial pour l'économie du Canada que nous conservions notre compétitivité internationale

L'économiste Richard Lipsey a récemment déclaré que la compétition a démontré qu'elle est le moyen le plus efficace d'engendrer et d'accroître la prospérité d'un pays. Dans son document de travail, intitulé La compétitivité mène à la prospérité, qu'il a récemment rendu public, le gouvernement fédéral reconnaissait ce principe. Nous souscrivons vivement à toute mesure qui stimulera la compétitivité internationale du Canada. Nous croyons que toute stratégie visant à accroître la compétitivité d'un pays sera probablement fructueuse si elle est fondée sur les compétentes et les ressources qui sont à la disposition du pays.

Les ressources naturelles abondantes du Canada sont à la base de notre compétitivité. Notre industrie minière doit pouvoir jouer un rôle de premier plan sur la scène internationale.

La politique d'intérêt public doit reconnaître la nécessité d'une industrie minière canadienne forte

Le document La compétitivité mène à la prospérité recommandait, entre autres, de s'éloigner de l'exploitation des ressources naturelles et de se diriger plutôt vers la technologie de pointe. Cela signifie que le Canada se dirigera vers les industries jugées "en essor", c.-à-d. celles de l'innovation et de la technologie (ordinateurs et semi-conducteurs, instruments, biotechnologie, sciences médicales, communications). Le Canada peut se targuer de posséder quelques entreprises de technologie de pointe qui sont

reconnues au monde. Nous devons cependant nous rendre compte qu'en dépit d'investissements considérables dans la recherche et le développement, notre entrée dans le secteur de la technologie de pointe se fera avec un retard. En règle générale, le Canada n'est pas prêt à pénétrer des marchés qui sont déjà caractérisés par la présence de sociétés expérimentées et dotées de capitaux importants, d'une grande compétence et d'une capacité de fabrication considérable.

Nous croyons que la stratégie optimale du Canada consiste à ne pas s'engager dans les secteurs dans lesquels nous ne possédons aucun éventuel avantage, mais de tirer profit de nos points forts, à savoir notre aptitude reconnue depuis longtemps à fournir les produits dont la monde a besoin. Nous devons suivre l'exemple de l'Allemagne et du Japon en se concentrant sur ce que nous possédons et sur ce que nous accomplissons bien.

À cet égard, nous aimerions signaler que l'industrie minière canadienne est à l'origine de la mise au point et de l'application des dernières techniques. Notre connaissance et notre expérience des techniques d'exploration, des concepts géoscientifiques, des instruments géophysiques ainsi que des méthodes d'exploitation souterraine et de fusion sont bien connues et sont constamment en demande à l'étranger. Le Canada est l'un des chefs de file de l'exportation de techniques et de savoir-faire.

La plupart des pays dotés de ressources naturelles limitées seront des marchés pour notre industrie minière. En outre, les occasions de vente de produits minéraux augmenteront en raison de la consommation croissante de ces produits au monde, notamment dans les nouveaux pays industrialisés.

L'appui gouvernemental à l'industrie minière doit être catégorique

En 1987, le gouvernement du Canada a fixé les six objectifs suivants dans le cadre de la politique minière :

a. procurer un contexte réglementaire et fiscal équilibré et juste;

b. favoriser le développement des secteurs minier et de la métallurgie comme points de départ du développement économique régional;

c. promouvoir le rendement technique amélioré et la compétitivité internationale accrue dans tous les secteurs de l'industrie;

d. aider les travailleurs et les collectivités touchés par l'adaptation industrielle;

e. encourager l'amélioration des exportations de minerais et de métaux ainsi que l'accès aux marchés traditionnels et nouveaux;

f. fournir des renseignements économiques, techniques et scientifiques précis et opportuns de l'industrie, des gouvernements fédéral et provinciaux, des syndicats et du grand public.

Ces objectifs ne font que refléter une attitude d'entretien envers l'industrie minière. Il faut en fait une politique fondée sur un énoncé clair et précis qui appui le rôle central de l'industrie minière au sein de l'économie canadienne.

Le Canada - producteur mondial et principal expert-conseil pour les marchés internationaux

Il y aura toujours un marché mondial des produits minéraux ainsi que de la technologie et de la compétence connexes : cela est certain. Au fur et à mesure où les pays dotés de ressources naturelles se serviront de ces ressources pour stabiliser et stimuler leur économie, le marché deviendra de plus en plus compétitif. Cela aussi est certain. Toutefois, le Canada a la capacité de conserver son rôle mondial de principal producteur de produits minéraux et de conseiller en matière de technologie traditionnelle et de pointe.

Résumé et conclusion

La puissance et la compétitivité de l'industrie minière est primordiale pour l'avenir économique du Canada. Cependant, nos réserves de minerais de base baissent depuis près de dix ans et l'exploration présente un sérieux recul. Afin de demeurer compétitifs et de concrétiser nos possibilités au sein du marché international, nous devons élaborer une stratégie à long terme qui est à la fois agressive et créative. Certaines mesures doivent être maintenant prises pour lancer le processus. Ces mesures sont les suivantes.

1. Le Canada doit posséder une politique minérale qui énonce une volonté politique claire et catégorique de développer davantage l'industrie minière.

   L'embarras et la réticence du Canada vis-à-vis de sa dépendance à l'égard des ressources naturelles sont inutiles et modestes. Tous les gouvernements fédéral, provinciaux et territoriaux doivent reconnaître et saluer avec fierté et confiance la contribution de l'industrie des ressources naturelles à l'économie canadienne, une attitude qui doit être reflétée dans la politique officielle, les déclarations publiques et les stratégies futures.

2. Le gouvernement fédéral doit revoir sa politique sur l'impôt et les encouragements financiers. Il s'agit du domaine qui est susceptible d'avoir les plus grandes répercussions sur l'exploration minière canadienne.

   Les réserves et l'exploration minières canadiennes sont en recul alors que les sociétés minières canadiennes investissent davantage à l'étranger.

3. Nous devons tirer profit du point fort actuel du Canada: le producteur le plus efficace, le plus avancé et le plus soucieux de l'environnement de produits et de conseils techniques au monde.

4. La politique de la Banque du Canada doit tenir compte des réalités de l'industrie des ressources naturelles.

5. Les gouvernements doivent créer un ensemble clair, coordonné et pragmatique de règles et de règlements qui éliminera le chevauchement des compétences, améliorera le respect des règles et favorisera l'investissement plutôt que le décourager. Le contexte réglementaire actuel est complexe et excessif et le refus des gouvernements de fixer des priorités a engendré un coût excessif de protection de l'environnement pour l'industrie minière.

6. Le Canada doit reconnaître que notre prospérité ultérieure dépend de la croissance de l'industrie des ressources. Les décideurs des gouvernements ont de plus en plus une attitude qui laisse croire que l'exploitation des ressources naturelles est dépassée et que cette industrie doit être remplacée par une industrie de technologie de pointe. Cette attitude est dangereuse et peu réaliste et elle devrait être supprimée. On se doit de fonder les stratégies qui visent à stimuler l'économie et la compétitivité internationale du Canada sur nos points forts et sur nos richesses naturelles.

ANNEXE A

Exemples de la modification de règlements miniers à l'étranger[1]

Bolivie

La Bolivie a promulgué une nouvelle loi sur l'exploitation minière qui est considérée comme l'une des plus intéressantes en Amérique latine. On prévoit qu'elle favorisera des investissements américains douze fois supérieurs, soit de 300 millions de dollars. En outre, la loi permet des co-entreprises étrangères dans les régions frontalières, auparavant interdites d'accès, qui renfermeraient des réserves minérales importantes. Les taxes minières sont de 2,5 % des ventes nettes par rapport à une taxe de 30 % sur les profits. Les profits réinvestis sont exonérés d'impôt. Les petites entreprises et les coopératives seront exonérées d'impôt jusqu'en 1999 (Mines and Minerals Weekly Bulletin, vol. 2, n° 21).

Chili

Au Chili, l'activité minière a reçu un traitement spécial en raison de son importance stratégique pour l'économie. Le Chili est le premier producteur mondial de cuivre et les minerais représentent 50 % des exportations. La plupart des lois qui régissent l'utilisation des terres et l'exploitation minière sont prévues de manière à favoriser l'industrie minière (World Mineral Notes, septembre 1989). Le code minier du Chili (loi n° 18, 248, 1983) précise qu'il est possible d'acquérir des droits d'exploitation minière conformément aux chapitre un et deux du code. Ces droits peuvent être conservés moyennant le paiement d'une taxe annuelle (Northern Miner Magazine, été 1991).

Le gouvernement examine de nouveaux encouragements, comme les actions accréditives, en sus des droits intéressants accordés actuellement aux investisseurs. En vertu des contrats d'investissements étrangers conclus avec le gouvernement, les investisseurs étrangers profitent des droits suivants : remettre ou réinvestir les recettes annuelles (aucun plafond) et remettre le capital après trois ans; choisir un taux d'imposition fixe plutôt qu'un taux national pendant les dix premières années (le taux peut être négocié pendant vingt ans pour les projets de plus de 50 millions de dollars), assorti de la possibilité de renoncer à une seule reprise le taux fixe et d'être assujetti alors au taux national;

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1. Liste non exhaustive.

obtenir des devises étrangères aux meilleurs taux de change en vigueur au moment de l'achat afin de remettre les profits et le capital; effectuer la comptabilité en dollars américains; recevoir un traitement juridique semblable à celui accordé à tous les autres investisseurs; obtenir des tarifs, des taxes de vente et des services fixes; exporter librement les produits, conformément aux conditions du contrat d'investissements étrangers; créer des comptes à l'étranger pour rembourser le revenu tiré des exportations (pour les investissements supérieurs à 50 millions de dollars). Le taux d'imposition global (35 % des recettes) est aussi très intéressant.

Colombie

Le congrès de la Colombie a approuvé en décembre 1990 l'une des plus importantes réformes dans l'histoire du pays. Cette réforme vise tous les secteurs, des syndicats aux taux de change et aux lois fiscales. La réforme accélère le programme du président Cesar Gaviria Trujillo qui cherche à ouvrir l'économie du pays et à supprimer les règlements restrictifs. La réforme profitera notamment aux investisseurs locaux et étrangers. Ces derniers possèdent maintenant les mêmes droits que ceux de la collectivité d'affaires locale (communiqué international, Secteur de la politique minérale, 18 janvier 1991).

Costa Rica

Les sociétés étrangères d'exploration et d'exploitation peuvent maintenant posséder l'ensemble des actions de l'entreprise (Northern Miner Magazine, été 1991).

Groenland

Le Premier ministre du Groenland a annoncé en juin 1991 de nouveaux règlements d'exploration et de mise en valeur des ressources minérales et des hydrocarbures à l'intention des entreprises étrangères. La nouvelle loi comporte ce qui suit : a) abolition de la règle qui veut que les gouvernements groenlandais et danois soient partenaires; b) modifications à la loi fiscale (taux d'imposition des sociétés est abaissé à 35 %); c) reconnaissance d'un éventuel problème d'imposition double et lorsqu'aucune entente ne permet d'éviter qu'une entreprise étrangère ne paie à deux reprises; d) création d'un bureau d'information qui aidera les entreprises d'exploration étrangères (lettre datée du 12 juillet 1991, ambassade canadienne).

Mexique

Le gouvernement mexicain a apporté des modifications substantielles à son code minier en décembre 1990. Les nouveaux règlements, qui visent à stimuler l'investissement, l'exploration et la diversification de la production minérale, permettront aux étrangers d'être maîtres à 100 % d'entreprises locales pendant 12 ans à partir de la première vente de produits minéraux par l'entreprise. Auparavant, les étrangers ne pouvaient détenir que 49 % des intérêts. La réduction du taux d'imposition maximal de 60 à 35 % et les négociations de libre-échange entre le Mexique, les États-Unis et le Canada attirent également l'attention des sociétés minières internationales (Northern Miner, 1er juillet 1991).

Mongolie

Le gouvernement de la Mongolie a adopté une loi sur l'investissement étranger et élabore une loi qui régira les droits, les permis et les redevances. Après plus e 70 ans de régime socialiste, la République populaire mongole s'ouvre aux pays occidentaux pour l'aider à transformer son économie. À titre d'exemple, la Mongolian Geological and Geophysical Exploration Co. d'Oulan Bator s'est associée avec Earth Satellite Corp. du Maryland pour réunir et diffuser des renseignements géologiques détaillés et octroyer des permis d'exploration (Northern Miner, 12 août 1991).

Pérou

Après avoir reconnu que ce sont les entreprises minières étrangères bien nanties qui laisseront leur marque, le président du Pérou a déclaré un état d'urgence pour l'industrie minière. Parmi les mesures adoptées jusqu'à présent, on remarque des allégements fiscaux et des plans de privatisation pour le secteur du minerai de fer. On prévoit également une réforme des taux de change et d'intérêts (Mines and Minerals Weekly Bulletin, 13 mai 1991).

Roumanie

Le ministère roumain de la géologie a fourni des renseignements sur deux gisements dans le but d'attirer des investisseurs étrangers (communiqué international, Secteur de la politique minérale, 11 janvier 1991).

URSS

Le ministère de la Métallurgie procède à une réorganisation qui aura une incidence considérable sur l'industrie minière de l'URSS. La responsabilité de la production de la Division des mines (c.-à-d. la propriété des mines) sera progressivement supprimée. Les mines seront probablement constituées en sociétés par actions à responsabilité illimitée et pourront être peut-être entièrement entre les mains d'étrangers. La loi qui permettra ce phénomène n'a pas encore été promulguée (Infomac, juillet 1991).

Il se trame des choses en Union soviétique pour que les conditions d'investissement soient plus intéressantes pour les étrangers, notamment en extrême-orient soviétique. Le conseil des ministres de l'URSS a adopté en décembre 1988 une résolution sur le développement accru des activités économiques externes des entreprises et coopératives de l'État et des autres sociétés non gouvernementales. La résolution prévoit que les profits des co-entreprises seront exonérés d'impôt pendant les trois premières années d'exploitation, que le taux passera ultérieurement à 10 % et que le rapatriement des profits sera facilité (World Mineral Notes, janvier 1990).

Viêt-nam

En août 1989, le Viêt-nam a adopté une ordonnance sur les ressources minérales qui constitue un cadre général de mise en valeur de ces ressources. Bien que l'ordonnance ne soit pas aussi précise qu'un code minier, il est nettement évident que le gouvernement est prêt à négocier des conditions d'exploitation qui n'auront rien à envier aux conditions qui prévalent dans d'autres pays, y compris le Canada (communiqué international hebdomadaire, Secteur de la politique minérale, 3 août 1990).

Zimbabwe

En mai 1989, le gouvernement du Zimbabwe a publié un nouveau guide destiné aux investisseurs et intitulé The Promotion of Investment: Policy and Regulations. Le guide vise à favoriser l'investissement dans les secteurs agricole, industriel, minier et commercial de l'économie (lettre du consulat du Zimbabwe, août 1989).

Un document de travail

rédigé par

L'Association minière du Canada
en consultation avec
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Table des matières

		Page
A.	Introduction	1
	. L'engagement de remettre en état de l'industrie minière	1
B.	Exigences gouvernementales relatives à la remise en état des mines	2
C.	La réaction de l'industrie minière	5
D.	Principes fondamentaux des lois	6
E.	Le concept de garantie financière "raisonnable"	7
F.	Conclusion	9

Annexes

A.	Lettre de crédit irrévocable	10
B.	Garantie d'exécution	12
C.	Fonds en fiducie	13
D.	Assurance	17

Avril 1991

Les garanties financières relatives aux engagements de remise en état, de désaffectation et de postfermeture des mines

La politique de l'industrie minière

A. Introduction

L'engagement de remettre en état de l'industrie minière

L'industrie minérale canadienne des années 1990 est parfaitement consciente de son rôle de protection de l'environnement en ce qui concerne l'ensemble des activités minières, soit de l'exploration à l'exploitation des raffineries et des fonderies.

En ce qui concerne les mines, une société minière est tenue légalement, selon sa localisation géographique, de prévoir les travaux techniques de remise en état, de désaffectation et de protection de l'environnement après la fermeture de la mine ainsi que de prévoir des garanties financières que ces travaux seront effectués conformément à une norme acceptable.

La remise en état d'une mine comporte généralement le démantèlement des bâtiments et de l'infrastructure et la stabilisation des dépotoirs de déchets et de stériles. Ces travaux peuvent commencer au cours de l'exploitation de la mine et sont habituellement parachevés cinq à dix ans après la fermeture de la mine. Les travaux représentent un coût considérable mais prévisible pour une société minière. Cependant, si des conditions exigent une gestion à long terme de la mine, les engagements de désaffecter et de protéger l'environnement après la fermeture peuvent s'étendre sur une plus longue période. Le coût sera probablement beaucoup plus élevé et ne peut être prévu avec autant de précision.

En conséquence, le coût de la remise en état et de la fermeture peut influer sur la compétitivité des sociétés minières canadiennes, dont la plupart poursuivent leurs activités et sont assujetties à des cours des métaux fixés sur les marchés internationaux et à une forte concurrence de la part des producteurs étrangers.

Dans l'intérêt d'une industrie minière prospère, il importe donc que les lois provinciales et territoriales qui régissent la remise en état des mines soient rédigées dans un esprit de rentabilité maximale.

Le présent document de travail a pour but de décrire la position générale de l'industrie minière canadienne vis-à-vis des garanties financières exigées par les gouvernements pour la remise en état des mines, notamment du fond et de la forme des garanties qui permettront aux sociétés minières de respecter leurs engage-

ments en matière de remise en état, de désaffectation et de protection de l'environnement.

Dans n'importe quelle situation, les intérêts du public, du gouvernement et de la société minière peuvent être protégés par un contexte réglementaire qui non seulement protège l'environnement, mais encore permet l'élaboration d'un programme de garanties financières qui est à la fois raisonnable et approprié compte tenu des circonstances. Une loi semblable serait conforme aux principes du développement durable qui prévoient une fusion des facteurs économiques et écologiques lors de la prise de décisions.

Le document a pour but de servir de point de départ des discussions avec chacun des gouvernements au Canada qui cherchent à mettre en place un contexte réglementaire réalisable qui régira ces engagements.

B. Exigences gouvernementales relatives à la remise en état des mines

Le programme environnemental des gouvernements provinciaux (et du gouvernement fédéral en ce qui concerne les territoires du nord) comporte un élément qui devient de plus en plus important, c'est-à-dire les aspects techniques et financiers de la remise en état, de la désaffectation et de l'entretien après fermeture des mines. D'un gouvernement à l'autre, les exigences varient et ne sont pas toutes au même stade d'évolution.

Les gouvernements de la Colombie-Britannique et de l'Alberta prévoient des exigences de ce genre depuis un bon moment. Le système albertain, fondé sur le recours à des lettres de crédit, a permis de répondre aux besoins en matière de remise en état. Les gouvernements de la Colombie-Britannique, de l'Ontario et du Québec ainsi que le gouvernement fédéral (pour le nord) présentent ou modifient des lois et des règlements qui exigent du propriétaire d'une mine qu'il présente un plan de remise en état au cours de l'exploitation de la mine et après sa fermeture et qu'il présente des garanties financières pour tous les travaux de remise en état.

À titre d'exemple, le projet de loi 71 de l'Ontario, qui modifie la Loi sur les mines, précise que les "garanties financières" d'un plan de fermeture représenteront de l'argent (fonds), une lettre de crédit d'un banque de l'annexe A, une caution d'une société de cautionnement ou "une autre forme quelconque de garantie (acceptable)".

L'expression "garantie financière" ne suggère pas l'emploi d'une forme particulière de garantie, pourvue que celle-ci soit appropriée. Selon les circonstances, une société peut avoir recours à:

- une lettre de crédit irrévocable (voir annexe A);
- une garantie d'exécution (voir annexe B);
- un fonds en fiducie déductible d'impôt et prévu par le gouvernement (voir annexe C);
- une police d'assurance (voir annexe D);
- une garantie d'une société-mère;
- un gage de biens;
- la tenue d'examens financiers satisfaisants;
- d'autres mesures ou des combinaisons de mesures selon les besoins.

La grande majorité des mines ont des problèmes de remise en état relativement simples. Les bâtiments doivent être retirés et les carrières comblées. Les dépotoirs et les stériles doivent être stabilisés. Une partie de ces travaux peut être effectuée au cours de l'exploitation de la mine. Les travaux sont généralement parachevés quelques années après la fermeture de la mine. Dans ce cas, une bonne part du coût de la remise en état est habituellement amorti par la récupération des bâtiments et du matériel. Le coût qui demeure ne représente pas un lourd fardeau pour la société minière qui peut respecter les exigences gouvernementales de cautionnement et les normes de remise en état de la mine.

Dans certains cas, comme l'exhaure acide, des coûts considérables et permanents peuvent découler de la gestion obligatoire de la mine pendant longtemps. Lorsque la société ne possède pas des recettes permanentes pour amortir ces coûts, les types habituels de garanties financières (cautions et lettres de crédit) ne suffiront peut-être pas à amortir le coût d'entretien permanent de la mine. Le gouvernement peut alors exiger le recours à un fonds en fiducie ("fonds").

Puisque les exploitants de mines privées sont de plus en plus tenus par les gouvernements de présenter des plans anticipés et des garanties financières pour la remise en état des mines, on constate que certaines sociétés, et éventuellement l'ensemble de l'industrie, doivent prendre à leur charge des frais considérables et qu'elles devront le faire aussi ultérieurement. Les porte-parole de l'industrie craignent qu'il soit extrêmement difficile pour une petite entreprise ou une société minière indépendante de fournir des garanties financières appropriées et, dans le pire des cas, que ces petites entreprises ne puissent mettre en valeur des mines.

En matière de responsabilité du propriétaire à l'égard de la remise en état des mines, on peut distinguer fondamentalement trois situations :

. les nouvelles mines;

. les mines existantes, y compris celles qui ne sont pas exploitées mais qui sont toujours en la possession d'une société;

. les mines abandonnées pour lesquelles les droits ont été récupérés par la province ou dont la société a disparu.

Quel que soit le type de garantie financière adopté, les principes suivants doivent s'appliquer, c'est-à-dire : le cadre doit être fonction du lieu, les devis doivent être sûrs et les dispositions doivent être rédigées de manière à favoriser une gestion responsable de la remise en état.

Dans le cas d'une nouvelle mine, le propriétaire tiendra compte, lors de sa décision d'investir, des nouveaux règlements gouvernementaux relatifs à la remise en état d'une mine ainsi que des frais qui se rattachent à la présentation de garanties financières acceptables. Les conditions d'exploitation et les exigences de remise en état peuvent être négociées au moment de l'étude d'impact et demeureront idéalement inchangées. La décision sera prise en connaissance de tous ces coûts.

En ce qui concerne une mine qui existe, des mesures de transition seront nécessaires. Le problème clé est l'application soignée et progressive par le gouvernement des nouvelles exigences de remise en état et de protection de l'environnement après la fermeture de la mine. L'application de nouvelles exigences au milieu de la période d'exploitation peut entraîner des frais et des risques imprévus et modifier les décisions relatives à l'extension ou à la fermeture des mines. Il ne s'agit pas simplement d'imposer des exigences plus onéreuses. Si celles-ci ont une influence négative sur l'aptitude d'une mine à demeurer rentable, elles peuvent provoquer sa fermeture anticipée, ce qui entraînerait des licenciements et peut-être une moins bonne remise en état. Pour que les objectifs de remise en état et les autres objectifs soient atteints, il importera d'analyser de manière approfondie la situation et d'entamer des négociations soignées entre gouvernement et société.

Pour ce qui est des exigences de remise en état et d'entretien des lieux pour une mine qui n'est pas exploitée, le gouvernement se tournera probablement vers le propriétaire. Cependant, certaines sociétés peuvent avoir fermé des mines il y a plusieurs années après avoir respecté les exigences en vigueur à l'époque et elles peuvent ne pas avoir les fonds nécessaires pour entreprendre les travaux supplémentaires et respecter les normes

actuelles.

Lorsque la mine a été abandonnée, que les droits de propriété sont retournés au gouvernement provincial ou que le propriétaire privé est insolvable ou a disparu, le gouvernement assumera la responsabilité financière de la mine. La société peut être prête à accepter ces coûts pour deux raisons. Premièrement, la mine a été peut-être abandonnée légalement en vertu de normes de remise en état en vigueur à l'époque. Deuxièmement, les avantages du développement économique et régional attribuables à l'exploitation de la mine ont profité à la société en général. La création d'un "superfonds", ou l'imposition des mines en exploitation pour amortir les mines abandonnées, devrait être évitée, car cette solution aurait une incidence négative.

Bien que l'industrie minière ne voit pas d'un bon oeil l'amortissement des frais de remise en état des mines abandonnées, elle s'engage de collaborer avec les gouvernements pour trouver des solutions de rechange à ce problème. La meilleure méthode consistera à trouver des mesures pour chaque province et pour chaque produit.

C. La réaction de l'industrie minière

Depuis quelques temps, les associations minières provinciales (AMP) et l'Association minière du Canada (AMC) suivent le cheminement des nouvelles normes provinciales et territoriales de remise en état des mines en raison des sérieuses répercussions financières de ces normes pour les sociétés minières qui oeuvrent presque partout au Canada.

Compte tenu de l'apparition de nouvelles normes gouvernementales, l'industrie a déjà offert aux gouvernements de les aider de diverses façons pour s'assurer que les règlements qui régissent les garanties financières de la remise en état des mines seront efficaces et rentables.

Depuis 1987, l'Association minière du Canada, les associations minières provinciales et territoriales ainsi que les chambres des mines collaborent avec les ministères des mines, par le truchement du groupe de travail intergouvernemental sur l'industrie minière, pour susciter une meilleure compréhension des problèmes que pose la remise en état des mines et pour élaborer des orientations appropriées pour les gouvernements et l'industrie.

En 1985, on a commencé ensemble à effectuer de la recherche sur l'exhaure acide, ce qui a donné le coup d'envoi au Programme de neutralisation des eaux et du drainage dans l'environnement minier (NEDEM). Comme son nom l'indique, le NEDEM est un vaste programme de recherche sur l'exhaure acide et sur son élimination. Plus de cinq millions de dollars ont été consacrés jusqu'à

présent à des projets particuliers. Les coûts sont partagés par l'industrie (47 %), le gouvernement fédéral (41 %) et les gouvernements provinciaux (12 %).

En 1989, l'AMC a franchi une étape décisive en adoptant la "politique environnementale de l'AMC" comme condition d'admission pour ses nouveaux membres. Les AMP ont adopté des orientations semblables. Dans la foulée de son orientation, l'AMC a publié l'année suivante un document intitulé Guide for Environmental Practice qui doit aider les sociétés minières à appliquer des normes sévères de protection de l'environnement.

Au cours de la conférence annuelle de 1990 des ministres des mines, l'AMC et les AMP ont présenté un mémoire, intitulé Sustainable Mining: Responding to the Challenge, dans lequel elles précisaient les objectifs à long terme en matière d'environnement de l'industrie minière. Le mémoire traitait également des normes de remise en état des mines et réclamait la déductibilité des versements à tout fonds géré par les gouvernements.

En mai et en novembre 1990, l'AMC, de concert avec les AMP, a tenu des conférences sur la remise en état à l'intention des cadres des sociétés minières. La deuxième conférence portait sur l'élaboration générale d'une position nationale de l'industrie sur les garanties financières de la remise en état des mines. Le présent document d'orientation représente une autre étape de l'élaboration de la position générale de l'industrie sur cette question.

D. Principes fondamentaux des lois

L'industrie minière estime que certains principes fondamentaux doivent sous-tendre les lois et les règlements qui exigent d'une société qu'elle fournisse des garanties financières pour la remise en état des mines. Dans ce qui suit, l'expression "remise en état" désigne l'ensemble des exigences de remise en état, de fermeture et de respect des engagements après la fermeture. En outre, par "société", on entend une co-entreprise, un partenariat ou une activité individuelle selon le contexte.

Bien que les principes dont il est question puissent être approfondis davantage, on peut les résumer comme suit.

Viabilité d'un projet — L'industrie minière convient qu'une exploitation ne doit pas être entreprise lorsque des sommes suffisantes ne peuvent être réunies pour la remise en état de la mine.

Propriétaire qui paie — Chaque propriétaire d'une mine (y compris le partenaire d'une co-entreprise) doit prendre à sa charge les frais de remise en état qui découlent

de ses activités.

Superfonds — Il ne doit y avoir aucun superfonds pour financer toutes les remises en état.

Application progressive des lois — Il doit y avoir une période appropriée d'application progressive des lois pour permettre aux sociétés minières de se préparer à les respecter.

Normes de fermeture — Le plan de fermeture approuvé doit être fondé sur les normes en vigueur.

Respect des engagements environnementaux — Un gouvernement doit reconnaître que le propriétaire d'une mine a respecté ses engagements lorsque les objectifs du plan de fermeture ont été atteints. Il doit y avoir également une démarche nette et un mécanisme pour que les garanties financières soient respectées au cours des travaux et au moment de leur parachèvement.

Mines abandonnées — On ne doit pas exiger des mines en exploitation qu'elles prennent à leur charge les frais de remise en état des mines abandonnées par le passé lorsqu'il est impossible de retrouver la trace des anciens propriétaires.

Réunion des coûts des projets — Une société diversifiée doit avoir la possibilité de réunir ses frais de remise en état en un seul mécanisme de garanties financières.

E. Le concept de garantie financière "raisonnable"

Un gouvernement peut s'attendre à juste titre à ce qu'une société minière fournisse, pour des mines en exploitation ou nouvelles, des "garanties raisonnables" pour le financement des futures mesures de remise en état. Lorsque vient le moment de déterminer ce qui doit être "raisonnable", le gouvernement doit être conscient que la société minière ne peut garantir entièrement que des fonds suffisants permettront d'amortir tous les frais de remise en état, quelles que soient les conditions. Les frais et le degré de certitude sont directement reliés. Lorsque le degré de certitude frise 100 %, les frais s'élèveront rapidement.

Puisqu'un projet normalement rentable pourrait être mis en péril par l'obligation de garanties financières qui viseraient la totalité des frais de remise en état, le gouvernement doit accepter des hypothèses et des devis financiers réalistes qui garantissent le financement "raisonnable" de la remise en état. Au cours des négociations entre un gouvernement et une société minière, les "garanties raisonnables" doivent être fonction du contexte.

L'industrie minière accepte le principe selon lequel une société minière présentera des garanties financières au cours d'une période jugée acceptable. On se doit d'éviter les exigences générales visant le versement immédiat de sommes à titre de garanties. Cette exigence mettrait en péril des exploitations qui seraient autrement rentables.

L'industrie minière estime également qu'une société doit pouvoir choisir elle-même une forme de garantie qui est appropriée en fonction du contexte, y compris les conditions techniques de la remise en état et la situation financière de la société.

Comme nous l'avons déjà mentionné, les types habituels de garanties qu'une société pourrait employer sont, entre autres, la lettre de crédit irrévocable (voir annexe A pour plus de détails), la garantie d'exécution (annexe B) et le fonds en fiducie déductible d'impôt et prévu par le gouvernement("fonds"). L'industrie minière considère le fonds en fiducie comme un fonds de retraite qui est un modèle fonctionnel de garantie financière dans le domaine des ressources humaines. La description d'un fonds en annexe conserve cette analogie avec les versements dans un fonds déductible d'impôt, géré par le cotisant conformément à des règles de cotisation gouvernementales générales et où les recettes du fonds sont également déductibles d'impôt et consacrées à des travaux approuvés.

Quelle que soit la solution ou la combinaison de mesures choisie, l'objectif doit être de garantir suffisamment de fonds pour la remise en état. Dans ce but, le gouvernement peut reconnaître d'autres types de garanties selon les circonstances comme une police d'assurance (décrite à l'annexe D), une garantie d'une société-mère, un gage de biens et la tenue d'examens financiers satisfaisants. Une société minière doit être en mesure de négocier un ou plusieurs types de mesures pour atteindre l'objectif de garanties financières efficaces, sûres et rentables.

Lorsqu'il faut régler un litige entre les parties qui porte sur les normes techniques, les devis, le choix des dispositions financières ou la conception et l'administration d'un fonds, l'industrie minière estime que la loi doit prévoir le recours à des experts professionnels, à la facilitation, à la médiation ou à l'arbitrage.

Le choix d'un mécanisme approprié, comme la nomination d'un comité impartial de facilitation et de médiation ou d'un comité d'arbitrage public, dépendra probablement de l'expérience acquise et du contexte au sein du gouvernement en question. De plus, on peut toujours avoir recours aux tribunaux en dernier ressort.

F. Conclusion

- Les gouvernements exigent de plus en plus des sociétés minières qu'elles possèdent une planification technique anticipée et des garanties financières pour la remise en état des mines. L'industrie minière a choisi de consulter les gouvernements et d'oeuvrer avec ceux-ci. En outre, elle a adopté une position générale qui s'applique aux négociations d'une société ou d'une association avec les gouvernements.

- L'industrie est prête à aider les gouvernements à élaborer des règlements qui régiront des garanties financières efficaces, sûres et rentables.

- L'industrie a élaboré un certain nombre de principes fondamentaux qui, à son avis, doivent sous-tendre les lois qui exigent qu'une société doive fournir des garanties raisonnables (voir chapitre D). La société s'engagera à prendre à sa charge les frais de remise en état et de surveillance selon une norme convenue.

- Lorsqu'il faudra définir une garantie financière "raisonnable", le gouvernement doit permettre à une société, pour respecter ses engagements, d'avoir recours à une lettre de crédit irrévocable, une garantie d'exécution, un fonds en fiducie déductible d'impôt et prévu par le gouvernement ou toute autre mesure ou combinaison de mesures reconnue par le gouvernement.

- Un gouvernement doit reconnaître que le propriétaire d'une mine a respecté ses engagements en matière d'environnement lorsque les objectifs du plan de désaffectation ont été atteints.

- Les lois doivent prévoir un mécanisme approprié pour la consultation de professionnels, la médiation ou l'arbitrage afin de régler les litiges sur le choix de dispositions financières ou la conception et l'administration d'un fonds.

ANNEXE A

LETTRE DE CRÉDIT IRRÉVOCABLE

Description : Une lettre de crédit irrévocable constitue une entente entre un établissement bancaire et une société par laquelle la banque versera des fonds à une tierce partie, soit le bénéficiaire, qui serait le gouvernement dans ce cas-ci, en vertu de conditions particulières inscrites dans l'entente.

Puisque la lettre de crédit est irrévocable, la banque émettrice doit répondre aux requêtes légitimes, c'est-à-dire celles conformes aux conditions de la lettre de crédit présentée par le bénéficiaire.

En outre, toute modification des conditions exposées dans la lettre de crédit doit être approuvée par tous les intéressés. Une lettre de crédit porte en général sur une période d'un an, parfois davantage dans certaines conditions.

Démarche : Puisque le financement de la remise en état s'échelonne sur plusieurs années, la démarche habituelle consiste à émettre une lettre de crédit au montant du fonds, avec une échéance d'un an qui est prorogée automatiquement d'un an, fondée sur une évaluation annuelle de l'état financier de la société par la banque. L'évaluation est habituellement terminée soixante jours avant la date d'expiration. Lorsque la banque décide de ne pas proroger la lettre de crédit, il y a alors défaut de paiement et le bénéficiaire en est avisé. Ce dernier peut encaisser la totalité de la valeur de la lettre de crédit.

Caractéristiques : Le contenu de la lettre de crédit, c.-à-d. les caractéristiques, reflétera les conditions de l'entente entre une société et le gouvernement, qui se rapportent à un plan précis de désaffectation. Il énoncera également les conditions précises par lesquelles des fonds peuvent être encaissés par le bénéficiaire. Ces conditions peuvent comporter, entre autres, le défaut d'exécution de certains travaux précisés par le plan de désaffectation, le défaut de respect de certaines normes de qualité ou le défaut de prorogation de l'échéance de la lettre de crédit.

Avantages : Les frais initiaux sont peux coûteux. Ils sont généralement négociables et sont fonction de la solvabilité de la société. Dans la plupart des cas, les frais sont inférieurs à 1 % de la valeur nominale par an, c.-à-d. l'équivalent de la somme requise, pour un bon risque bancaire. Cependant, les lettres de crédit seront assorties d'une indemnité ou d'une garantie de la société et, à cet égard, celle-ci prendra à sa charge des frais supplémentaires.

Les frais liés à une lettre de crédit sont déductibles d'impôt.

Lorsqu'une lettre de crédit est en vigueur, seules quelques opérations administratives minimes sont nécessaires.

Inconvénients : L'octroi d'une lettre de crédit peut dépendre de la cote de solvabilité d'une société. Lorsque cela est le cas, une société peut être tenue de déposer à la banque toute la valeur nominale de la lettre de crédit pour s'assurer que des fonds seront à la disposition du bénéficiaire.

Une société qui ferme la seule mine qu'elle possède ne peut obtenir une lettre de crédit à moins :

i) qu'elle soit une filiale d'une société-mère, auquel cas cette dernière pourrait donner une garantie;
ii) que la société dépose à la banque la valeur nominale totale de la lettre de crédit.

ANNEXE B

GARANTIE D'EXÉCUTION

Description : Bien qu'une garantie d'exécution représente un type particulier de lettre de crédit, présentant donc toutes les caractéristiques d'une telle lettre, elle est le plus souvent un cautionnement accordé par une compagnie d'assurance. Conformément à l'entente relative à la garantie d'exécution, l'assureur accepte d'offrir un cautionnement pour la société et s'engage à prendre à sa charge, jusqu'à une certaine limite, toutes les requêtes et dépenses qui découlent du plan de désaffectation. Le gouvernement est le bénéficiaire et toute modification de la garantie doit être approuvée par les trois intéressés.

Démarche : La démarche est semblable à celle d'une lettre de crédit. La garantie d'exécution est octroyée pour une période précise pour la valeur nominale des travaux de remise en état prévus par le plan de désaffectation et elle est prorogée à partir des résultats d'une évaluation de la solvabilité de la société. Lorsque la garantie n'est pas renouvelée, le gouvernement peut encaisser le montant total.

Caractéristiques : Les caractéristiques sont semblables à celles d'une lettre de crédit.

Avantages : Les frais initiaux sont relativement peu coûteux, bien que les garanties d'exécution soient les plus onéreuses des lettres de crédit.

Les frais de mise en oeuvre d'une garantie d'exécution sont déductibles d'impôt.

Lorsqu'une garantie d'exécution est en vigueur, seules quelques opérations administratives minimes sont nécessaires.

Inconvénients : L'octroi d'une garantie d'exécution peut dépendre de la cote de solvabilité d'une société. Lorsque cela est le cas, une société peut être tenue de déposer à la compagnie d'assurance toute la valeur nominale de la garantie pour s'assurer que des fonds seront à la disposition du bénéficiaire.

Une société qui ferme la seule mine qu'elle possède ne peut obtenir une garantie d'exécution à moins :

i) qu'elle soit une filiale d'une société-mère, auquel cas cette dernière pourrait donner une garantie;
ii) que la société dépose à la compagnie d'assurance la valeur nominale totale de la garantie d'exécution.

ANNEXE B

INDICATEURS ÉCONOMIQUES CLÉS: CHANGEMENT EN 1990

(Source : The Economist)

	PNB	VENTE AU DÉTAIL	CHÔMAGE
JAPON	+ 5.9	+ 2.1	- 0.1
ALLEMAGNE	+ 5.2	+ 8.0	- 1.0
PAYS-BAS	+ 4.7	+ 1.8	- 0.5
BELGIQUE	+ 4.0	- 0.8	+ 0.5
ESPAGNE	+ 2.7	+ 10.2	- 0.5
ITALIE	+ 1.11	- 4.2	0
FRANCE	+ 0.9	- 1.8	+ 0.7
SUISSE	- 0.3	- 0.8	+ 0.6
SUÈDE	- 0.4	- 3.5	+ 1.1
É.-U.	- 0.6	- 0.9	+ 1.8
AUSTRALIE	- 1.5	- 1.6	+ 2.6
G.-B.	- 2.4	- 3.2	+ 2.2
CANADA	- 2.8	- 11.4	+ 3.0

ANNEXE C

FONDS EN FIDUCIE

Description : Un fonds en fiducie est un fonds créé par une société dont le montant est jugé suffisant pour prévoir les frais de remise en état prévus par le plan de désaffectation. Le montant du fonds sera fonction des dépenses annuelles prévues de remise en état, de la politique d'investissement et des taux de rendement réel prévus.

Démarche : De par sa nature, le fonds en fiducie ressemble à un régime de retraite, c.-à-d. qu'il doit être administré par un troisième fiduciaire et doit posséder un gestionnaire de placement qui est chargé de gérer les fonds conformément à une politique d'investissement définie. Les versements au fonds sont normalement effectués au moyen d'un ensemble de paiements répartis sur une période déterminée. Les retraits servent à payer les travaux de remise en état prévus par le plan de désaffectation. L'administration du fonds est assujettie à une vérification périodique. Au terme des vérifications périodiques ou des travaux de désaffectation, toutes les sommes excédentaires sont remises à la société.

Caractéristiques : Le fonds doit être conçu de façon à procurer au gouvernement une "garantie raisonnable" qu'il y aura suffisamment de fonds pour amortir la remise en état. Le fonds sera également créé pour payer les dépenses liées à la remise en état d'une mine en particulier, bien que les sociétés qui possèdent plus d'une mine souhaiteront peut-être mettre en commun les fonds. Les conditions précises qui président à l'administration du fonds en fiducie seront énoncées dans une entente dont l'application sera confiée au fiduciaire. Il importe que les recettes du fonds soient placées dans un abri fiscal jusqu'au moment de leur retrait.

L'industrie minière estime qu'un plan de désaffectation approuvé par le gouvernement doit être le point de départ de la création d'un fonds déductible d'impôt et prévu par le gouvernement pour la remise en état de mines.

Avantages : La société conserve une partie des intérêts qu'elle possède dans le fonds, car tout excédent du fonds, dû à des paiements trop élevés ou à des recettes exceptionnelles, doit être remis à la société après l'une des vérifications périodiques ou au terme du plan de désaffectation. En outre, la société aura tout intérêt à veiller à une saine gestion du fonds.

Si les modifications que proposent l'industrie minière et les gouvernements provinciaux sont apportées à la Loi de l'impôt sur le revenu, les versements au fonds seront déductibles d'impôt.

Le gouvernement et le public seront peut-être plus rassurés lorsque des fonds seront disponibles pour la remise en état prévue, car les fonds en fiducie sont plus visibles et souvent mieux compris que d'autres solutions.

Inconvénients : Compte tenu des longues périodes nécessaires, les valeurs qui sont accolées aux paramètres qui détermineront l'importance du fonds, ne sont pas immuables même si les mêmes problèmes se posent pour chacun des autres mécanismes de financement.

Si de vastes montants d'argent comptant sont nécessaires pour créer un fonds, il importera de prévoir une période de transition pour permettre à la société de recueillir les garanties financières requises.

Critères pour une utilisation efficace du capital, la politique d'investissement et une emprises sur le fonds

Il est souhaitable qu'un fonds soit conçu et administré de manière équitable pour la société minière et le gouvernement. En conséquence, l'industrie minière propose que les principes suivants président à la conception et à l'administration d'un fonds.

Critères particuliers	Chaque mine doit être évaluée séparément et la garantie requise doit refléter les coûts et les risques de la remise en état de cette mine.
Fondements des devis	Les devis doivent être fondés sur des études de génie et techniques soignées et accompagnés d'évaluations officielles des risques pour tenir compte des probabilités et des conséquences de scénarios de rechange.
Gestion responsable de la remise en état	La conception du fonds doit encourager les sociétés minières à réaliser de manière dynamique et responsable leurs programmes de remise en état afin de limiter les coûts et de trouver de nouvelles solutions techniques aux problèmes de la remise en état.
Similitude avec un régime de retraite	Les principes qui président à la création d'un fonds doivent être semblables à ceux utilisés pour un régime de retraite.
Politique investissement	La politique d'investissement doit favoriser des investissements qui optimalisent le rapport risque-rendement, en tenant compte du fait que le fonds représente un investissement à long terme.

Gestionnaire d'investissement	Le fonds doit être administré par un gestionnaire d'investissement choisi par la société. Celle-ci doit pouvoir avoir la possibilité d'administrer elle-même le fonds à l'aide de directives raisonnables, comme dans le cas d'un régime de retraite.
Loi sur la surveillance	Une loi semblable à celle qui régit les régimes de retraite ou toute autre loi peut être utilisée pour surveiller le rendement du fonds et veiller au respect de la politique d'investissement.
Choix du mécanisme de financement	Selon les circonstances, une société doit pouvoir choisir le mécanisme de financement autorisé par le gouvernement (ou une combinaison de mécanismes) qui est le plus efficace pour son capital.
Dépenses déductibles d'impôt	Lorsqu'un fonds de remise en état prévu par le gouvernement est nécessaire, les versements doivent pouvoir être considérés comme des dépenses déductibles aux fins de l'impôt sur le revenu et de l'impôt sur les mines.
Recettes du fonds dans un abri fiscal	Les recettes qui proviennent d'un fonds devraient être placées dans un abri fiscal jusqu'au moment de leur retrait.
Gestion des investissements	Tous les frais de la gestion des investissements devraient être financés à partir des recettes du fonds.
Fiduciaire du fonds	Une tierce partie indépendante, comme une société de fiducie, peut représenter un fiduciaire acceptable pour un fonds.
Emprise gouvernementale	L'industrie minière s'oppose à toute emprise gouvernementale sur la gestion des investissements dans un fonds.

Examen et vérification d'un fonds en fiducie

L'industrie minière propose un certain nombre de directives qui s'appliquent à un examen périodique du fonds et à un mécanisme de vérification. L'intégrité de l'examen et de la vérification est particulièrement importante compte tenu de la recommandation de l'industrie selon laquelle tout excédent doit être remis, sans ajustement fiscal, à la société.

Voici ces directives :

Examen ou vérification périodique	Il est nécessaire de prévoir un examen ou une vérification périodique d'un fonds pour garantir un débours et une utilisation appropriée de fonds conformément au plan de désaffectation approuvé.
Portée de la vérification	Une vérification comportera la rédaction d'un état financier, un examen technique des travaux exécutés et, lorsqu'il y a lieu, une réévaluation des besoins de remise en état et des contributions financières.
Exécution de la vérification	On doit embaucher un comité approprié qui sera chargé de l'examen et de la vérification, avec le concours d'experts techniques, d'ingénieurs, de juristes et d'actuaires.
Fréquence	Un examen doit être effectué périodiquement, à savoir à tous les trois à cinq ans ou plus souvent s'il cela est souhaitable, par le gouvernement ou la société.
Fonds excédentaires	Les fonds excédentaires découverts par un examen doivent être remis, sans ajustement fiscal, à la société.

ANNEXE D

ASSURANCE

Police d'assurance

En règle générale, aucune police d'assurance ne prévoit les frais de remise en état à long terme. Cependant, les compagnies d'assurance ont manifesté un intérêt et semblent prêtes à créer un "instrument approprié" pour répondre aux exigences des gouvernements.

On expose ci-dessous l'une de ces propositions. Il convient de signaler que cette proposition n'a pas été mise à l'essai au Canada et qu'elle ne conviendra peut-être pas à toutes les situations.

Description : Ce mécanisme de financement représente un type particulier de garantie d'exécution. Il indemnise le gouvernement à concurrence d'un montant considérable, disons 100 millions de dollars, mais il est assujetti à une indemnité maximale d'un montant inférieur, disons les frais de remise en état annuels et prévus, au cours d'une période de douze mois. La garantie est appuyée par un fonds qui équivaut en fait aux primes payées par la société.

Démarche : La garantie d'exécution peut être formulée de plusieurs façons pour répondre à diverses situations. Les contributions ou les primes, par exemple, peuvent s'échelonner sur une certaine période, comme de trois à cinq ans. L'indemnité maximale versée par l'assureur au cours d'une période de douze mois peut être établie selon une échelle décroissante pour correspondre à la baisse des frais de remise en état. La limite maximale peut aussi augmenter si les conditions d'investissement sont favorables ou si les paiements n'atteignent pas les niveaux prévus. Le fonds ou les primes d'assurance sont investis dans des valeurs sûres, comme les bons du Trésor, qui reflètent le degré de risque et la "nouveauté" de l'instrument.

Afin de retirer des fonds dans le cadre de cette garantie d'exécution, le gouvernement ou peut-être même la société présenteront à l'assureur leurs requêtes légitimes pour l'exécution des travaux. L'assureur versera les sommes nécessaires.

Caractéristiques : Les conditions de la garantie d'exécution seront le miroir de l'entente conclue entre le gouvernement et la société. Les primes versées par la société seront fonction du montant estimatif nécessaire au parachèvement du plan de désaffectation ainsi que des calculs des actuaires pour déterminer les versements annuels et le montant total de la garantie. Il peut être possible, bien que cela soit probablement onéreux, que les primes soient versées annuellement.

Avantages : Les contributions financières, c'est-à-dire les primes, sont inférieures aux sommes d'un fonds en fiducie.

Les primes seront déductibles d'impôt.

Après l'entrée en vigueur, les opérations administratives sont minimes par rapport à celles d'un fonds en fiducie.

Inconvénients : Ce type de financement risque d'être onéreux. À titre d'exemple, les primes initiales risquent d'être très élevées pour étoffer la garantie. De plus, des taxes et des frais de courtage peuvent se greffer aux primes.

Ce type de financement n'a pas été mis à l'essai au Canada et il faudra peut-être discuter longuement de cette question avec les gouvernements avant qu'ils l'approuvent.

Tout excédent financier du fonds ne sera pas remis à la société.

Société d'assurance captive

Une société d'assurance captive (la "captive") constitue un moyen de financement qui contribue à l'administration des risques. Elle représente une compagnie d'assurance qui appartient à l'assuré ou à une filiale de l'assuré et a pour but d'assurer les risques du propriétaire. Il est donc important de constater qu'il n'y a aucun transfert des risques à l'extérieur de la société. La captive représente, en termes simples, un moyen de subdiviser officiellement les risques du propriétaire. Bien que les fonds soient subdivisés, certains frais doivent être comparés aux recettes recueillies.

Puisque la captive est une société constituée, elle doit être suffisamment capitalisée pour garantir les risques et répondre aux exigences statutaires minimales de la maison-mère. En règle générale, les primes doivent permettre d'éponger les pertes prévues et les dépenses, moins les recettes d'investissement.

L'engagement à long terme en faveur de la captive et la responsabilité de ses activités sont les deux facteurs essentiels de son succès.

En raison d'une capitalisation limitée, une captive participe généralement aux premières couches où les pertes sont nombreuses mais prévisibles et où les achats limitent normalement la fragmentation de la couverture. La contribution en quote-part dans les couches excédentaires n'est généralement pas viable en raison des risques élevés et des primes relativement faibles associées à ces couches. Un assureur commercial réunit les risques et il est si bien capitalisé que ces couches excédentaires sont facilement garanties.

Les programmes de sociétés captives peuvent être représentés par des polices directes ou composées. On prévoit en général au Canada que le programme sera composé. Lorsqu'une police est rédigée par un assureur non accrédité au Canada (c'est le cas d'une police directe), la taxe d'accise de 10 % du gouvernement fédéral sur les primes brutes est perçue à moins qu'il soit prouvé que l'assurance n'est pas disponible au pays.

Un programme composé peut être conçu de deux façons. Dans la première, la société captive accepte une assurance à risques et en excédent de pertes élevés (généralement prévue par les courtiers de la société-mère). Selon le second mode, la société-mère prévoit la cession d'un plein de conservation à la captive et achète l'excédent de pertes et l'excédent de couverture directement des réassureurs. Le mode B est généralement moins onéreux à administrer, car la captive ne traite pas directement avec les réassureurs, mais n'accorde pas autant de marge de manoeuvre. Chaque contexte dicte le choix du mode le plus approprié.

Avantages :

Voici les avantages pour une captive :

- l'octroi de certificats;
- répondre aux exigences statutaires de couverture;
- avoir accès aux réassureurs;
- élaborer la gestion des risques grâce :
  - à l'administration et à la coordination d'un programme consolidé;
  - à la reddition de comptes;
  - à l'optimalisation des niveaux de déductibilité;
- avoir une influence lors des négociations avec les marchés commerciaux;
- des avantages fiscaux.

Il convient d'examiner en détail la portée de chacun de ces avantages. Si les instances provinciales approuvent la captive, cette solution peut être avantageuse.

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48TH ANNUAL MINES MINISTERS' CONFERENCE

Managing Canada's Mineral Endowment

The Mining Association of Canada

HALIFAX, Nova Scotia
September 22-24, 1991

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MAC

The Mining Association of Canada
L'Association minière du Canada

MANAGING CANADA'S MINERAL ENDOWMENT

Presented by The Mining Association of Canada

on behalf of the

Provincial and Territorial Mining Associations

and Chambers of Mines

to the

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CONTENTS

	PAGE
INTRODUCTION	I
EXECUTIVE SUMMARY	II
CHAPTER 1:	
THE IMPORTANCE OF MINING TO CANADA	1
The Economic Contribution	1
A Force for Unity	2
CHAPTER 2:	
GLOBAL OPTIONS FOR CANADA'S MINING INDUSTRY	3
Intensifying Global Competition	3
Canada's Balance Sheet in 1991	4
CHAPTER 3:	
STRATEGIC MANAGEMENT OF MINING ISSUES	7
The "Sunset" Fallacy	7
Mineral Industry Response to Global Competition	8
Strategic Responses to Government-Related Issues	8
CHAPTER 4:	
THE MINING INDUSTRY AND THE ENVIRONMENT	10
Statement of the Issue	10
Industry Initiatives	11
Strategies for Governments	12

CHAPTER 5: PAGE

GROWING REGULATION: UNCERTAINTY AND THE COSTS OF COMPLIANCE 14

Statement of the Issue 14
Industry Initiatives and Strategies 15
Principles of Regulation 16
Joint Government/Industry Action 17

CHAPTER 6:

MINE RECLAMATION, DECOMMISSIONING AND POST-CLOSURE OBLIGATIONS 18

The Issue of Tax Deductibility of Expenditures into a Government-Mandated Mine Reclamation Fund 18
Other Mine Reclamation Issues 20
Financial Assurance for Mine Reclamation 21

CHAPTER 7:

PUBLIC IMAGE OF MINING 24

The Problem and Industry's Response 24
Mines Ministry Initiatives 25

CHAPTER 8:

ACCESS TO AND USE OF LANDS 27

Land Use Issues 27
Land Withdrawals and the Mineral Industry Land Use Committee 28
New Parks and Mineral Resource Assessments 30
Aboriginal/Mining Industry Cooperation 31

CHAPTER 9:

HUMAN RESOURCES, EDUCATION AND TRAINING 32

Educational Strategy 32
Human Resources Study of the Mining Industry 33
Aboriginal Participation 33

CHAPTER 10: PAGE

MINERAL EXPLORATION ISSUES 34

Adequacy of Base Metal Reserves 34
Geological Surveying and Mapping 35

CHAPTER 11:

OIL SANDS DEVELOPMENT 36

Resource Base and Production Trends 36
Oil Sands as a Substitute for Declining Conventional Reserves 37
Joint Development Initiative 37

CHAPTER 12:

FRAMEWORK POLICIES OF GOVERNMENT 39

Fiscal and Monetary Framework 39
Specific Fiscal Policies 41
Sales of Gold from Canada's Official Reserves 41
Infrastructure and the Policy Mix: A Yukon Example 42

RECOMMENDATIONS 44

INTRODUCTION

The theme of the 1991 Conference of Mines Ministers is "The Importance of the Mineral Industry to Canada". Our theme in this presentation is that the mining industry can continue to make an important contribution to Canada only if governments and the industry itself develop strategies to meet intensifying global competition.

Mining companies must develop their own strategies to survive and prosper as world class competitors. Governments must develop strategies, expressed in policies and legislation, that strengthen rather than impede the resilience and adaptability of the industry.

Canada has a rich mineral endowment. Effective industry and government strategies are needed to translate this natural strength into benefits for the people of Canada.

The leaders of the mining industry, through the Board of Directors and the Executive Committee of The Mining Association of Canada (MAC), are nearing completion of a careful assessment of MAC's roles and services to members. The Association is developing new strategies for serving its members better and for meeting expected changes in the coming decade. An important aspect of this review of the long term plans of the Association is an improved process for responding, in close collaboration with the Provincial and Territorial Mining Associations, to public policy issues as they arise.

MAC wishes to share with the Ministers of Mines its progress on some of its initiatives on government-related issues. In this presentation the industry also offers to the Mines Ministers its recommendations for government strategies to strengthen the ability of the Canadian minerals industry to compete and at the same time maximize the benefit of Canada's mineral endowment for the people of Canada.

EXECUTIVE SUMMARY

Chapter 1

* The mining industry contributes significantly to Canada's Gross Domestic Product (GDP), employment, investment and exports. Mining is the mainstay of many communities and of some regions of Canada. By the extent of its operations, globally and across Canada, the mining industry has developed a breadth of viewpoint and is a force for Canadian understanding and unity.

Chapter 2

* Because of intensifying global competition, Canadian mining companies must be strong, world class competitors. When investing in new projects or facilities, they are continually faced with the necessity of deciding between Canada and other countries to expand their base of operations. Policies of governments in Canada have an important influence on such decisions.

* Among Canada's significant assets from the standpoint of mineral-related activity are: large known reserves of minerals; a competent, well educated work force; a strong infrastructure; a high standard of living; and a stable political system. The small domestic market, immense extent of Canada and resulting high transportation costs are built-in liabilities.

* Government strategies and initiatives are necessary to undergird commercial activities in Canada and to offset in part the inherent liabilities.

* Top government-related issues for the mining industry today call for governments, jointly with industry, to develop strategies that will enhance the competitiveness of the mining industry and that will guarantee Canada's ability to develop its rich mineral endowment for the maximum benefit of its people.

Chapter 3

* Canadian mining companies and associations are responding to global competition by working out strategies that will equip mining companies to succeed in the global materials business in a time of challenge and change.

* This submission explores the strategies and initiatives which the industry and governments, sometimes jointly, should consider with respect to top issues identified by senior mining executives.

Chapter 4

* The mining industry is committed to the concept of sustainable development and recognizes the need for improvement in environmental performance where shortfalls exist. But the industry is concerned about regulatory requirements that are not scientifically based or that are technically unrealistic or unnecessarily burdensome and costly.

* The mining industry is also concerned by a lack of awareness within the public and within government as to the industry's environmental performance and achievements. Unnecessarily stringent regulatory requirements may result from a poor public image of the industry. Continued progress in environmental management is a prerequisite to improving the industry's image. MAC is developing strategies both for improving operations and for dealing with the public and with interest groups.

* Industry endorses consultation by governments with affected stakeholders when setting objectives and standards for environmental protection.

* Joint programs can be developed that utilize the expertise of the mining industry in an environmental emergency.

* Governments and industry should jointly develop strategies to improve both the environmental performance of the industry and public awareness of its accomplishments.

Chapter 5

* Government regulation is growing and in content, form or process is adding significantly to the mining industry's regulatory cost burden. Growing regulation and overlapping responsibility create an expectation of future higher project costs as well as uncertainty as to whether valuable mineral reserves can be developed. Changing environmental standards and criteria and seemingly hostile changes in rules add to the problem.

* Among the issues arising from international or foreign sources are proposals to regulate specific commodities on the basis of their intrinsic toxicity rather than the risk they pose in use.

* All of these regulatory issues tend to increase risk, uncertainty and regulatory costs for the mining industry. The industry is responding by trying to improve public awareness of the impact on projects and investment of government actions and by seeking a stable, workable regulatory environment.

* MAC urges the acceptance by governments and the public of certain principles of environmental regulation with respect to: government consultation with stakeholders; the demonstration of a need for regulation, a least-burden approach; matching of standards and criteria of required performance with industry capabilities; equitability of liability for environmental damage; avoidance of duplication of federal and provincial regulatory and project assessment activities; and added caution in adopting foreign or international actions and conventions.

* MAC proposes joint government/industry action to review international initiatives and avoid possible duplication of federal and provincial regulations in the environmental and health field.

Chapter 6

* Previous annual Mines Ministers' Conferences have received reports examining different aspects of mine reclamation, including tax treatment of reclamation expenditures. In spite of continued requests from MAC and from provincial governments, the federal Department of Finance is delaying a decision on whether to allow a deduction for Income Tax purposes of company contributions to a government-mandated mine reclamation Fund. The matter is important for the industry, which urges the Mines Ministers to seek a favourable and early answer from the Minister of Finance.

* MAC has considered possible goals and strategies for industry to adopt with regard to other mine reclamation issues, including: standards to achieve on closing a mine; development of enhanced reclamation technology; and means of dealing with abandoned or dormant mines.

* The mining industry in 1991 produced a discussion paper (attached) on Financial Assurance for Mine Reclamation, Decommissioning and Post-Closure Obligations. The paper sets forth a national industry position on what should constitute "reasonable financial assurance" and related matters. Basic principles are proposed for the development of legislation and regulations to provide for financial assurance of mine reclamation.

Chapter 7

* Recent surveys reveal negative public perceptions of the mining industry in the areas of environment and health and safety. MAC recognizes that without public support, there is a higher probability of government policies that are detrimental to the industry.

* The mining industry has adopted a communications plan with objectives and strategies relating to four key areas: adverse regulation and legislation; negative or mistaken perceptions; adversarial relationships; and past performance of the industry. Among the strategies is a "communications audit".

* Industry recommends to Mines Ministers that they undertake an enhanced role in (a) communicating their expertise to other departments of government, and (b) developing awareness programs for government decision-makers and the general public.

Chapter 8

* Access to and use of lands on reasonable terms for mineral exploration and development can be impeded by restrictions of various types imposed by governments. Because no region of Canada can be ruled out for lack of mineral potential, mineral exploration must take place over a wide area. A shrinkage of this area through land withdrawals limits opportunities to tap Canada's mineral endowment.

* The cumulative effect of alienation of land from mineral exploration and development in the late 1980s, resulting from increased environmental concerns and a move to expand national parks and other protected areas, led MAC, the Prospectors and Developers Association of Canada (PDAC) and the provincial and territorial mining associations in 1989 to form the Mineral Industry Land Use Committee (MILUC).

* MILUC has developed a computerized geographic information system to delineate the extent and nature of restrictions on access to lands for mineral exploration and development. The National Land Use Data Base (NATLUS) was developed by MILUC's consultant, Earth & Ocean Research Ltd. of Dartmouth, Nova Scotia, with the cooperation of the Mineral Policy Sector of Energy, Mines and Resources Canada (EMR), Environment Canada and the provincial and territorial departments of mines. The NATLUS system will add to knowledge of existing land use restrictions across Canada and will permit more advanced analysis of the effects on mining. NATLUS will also be an important tool for governments, conservation groups, etc. to use in land use planning.

* The creation of 18 new parks (of which 10 would be in the North) by 2000 as announced in the Green Plan, added to the area of existing national parks where mineral exploration and development is already banned, will result in from 3% to approximately 4.6% of Canada's land mass being reserved in national parks, an area three times the combined size of the three Maritime Provinces.

* MILUC is concerned over the apparent haste to implement proposals in the Green Plan for reserving 12% of Canada's land mass for national parks and wilderness areas. The mining industry wishes to ensure that EMR is closely involved in the process of selection of lands for the new parks and that necessary resources are made available for EMR to undertake a high standard of evaluation of mineral resource potential early in the process.

* Unsettled native land claims inhibit mineral exploration and development and create uncertainty as to the eventual disposition of large tracts of land. The mining industry therefore urges an early settlement of outstanding native land claims in the North and in British Columbia.

* To ensure a smooth and mutually satisfactory transition to a new regime of land ownership and land use regulation in Nunavut in the Eastern Arctic, the Tungavik Federation of Nunavut (TFN) and the mining industry in 1990 established a Joint Inuit/Mining Industry Working Committee. The industry has proposed a comparable arrangement to the Council for Yukon Indians.

Chapter 9

* Competitiveness of the mining industry is dependent on a well educated, skilled and adaptable labour force. Initiatives from governments, labour and industry, separately and jointly, are needed to ensure that this objective is maintained.

* MAC, the United Steelworkers of America and the Canadian Institute of Mining, Metallurgy and Petroleum requested that Employment and Immigration Canada undertake a study of mining human resources. The study, announced in June 1991, will adopt a pragmatic and collaborative approach aimed at developing a strategy for the industry to meet human resource challenges.

* MAC recognizes the importance of the Intergovernmental Working Group on the Mineral Industry (IGWG) Task Force on Native Participation in Mining and recommends that Mines Ministers continued to give its work a high priority.

Chapter 10

* Additional factual information and analysis are needed to provide a basis for future federal and provincial government strategies regarding exploration for base metals in Canada. PDAC and MAC are exploring options for a study to answer the question: Is current exploration in Canada sufficient to sustain Canada's share of future additions to world base metal reserves? The Associations are seeking EMR's cooperation for this study.

* The mining industry recognizes the importance of high quality geological surveying and mapping of Canada as conducted by the Geological Survey of Canada and complementary programs of the provincial and territorial governments. In certain areas the level of this activity should be increased.

Chapter 11

* Massive oil sands reserves in Alberta can provide a basis for maintaining or expanding Canada's production of crude oil as conventional reserves of petroleum decline. Production of synthetic crude oil from the oil sands, valued in 1990 at over $2 billion, already accounts for 13.8% of Canada's total production of crude oil and equivalents.

* Production from mineable oil sands will be needed to meet future domestic needs and, given current forecasts of oil prices, can compete with imports.

* Orderly development of the oil sands will benefit Canada in terms of economic growth, employment, spin-off manufacturing, increased export opportunities, environmentally safer fuels and security of supply.

* The mining industry proposes a joint government/industry working committee to prepare an oil sands development strategy.

Chapter 12

* The fiscal and monetary framework established by governments in Canada influences the profitability of Canadian mining operations and the direction of long term investment in Canada and abroad. Prime policy considerations for the industry include: Canadian dollar exchange rate; interest rates; labour costs; taxation; incentives and assistance to industry; and infrastructure.

* The federal Department of Finance and the Bank of Canada are imposing a cost/price discipline on Canadian industry, labour and consumers intended over time to enhance the competitiveness of Canadian industry.

* The mining industry advocates a mix of fiscal and monetary policies designed to reduce government deficits and indebtedness, to restrain disproportionate increases in Canadian prices, taxes and wage costs relative to Canada's industrial competitors and to enhance Canadian competitiveness.

* Specific tax measures may offset broad policies to foster competitiveness. An example is the removal of the 3 cents per litre rebate of excise tax paid on fuel. Since the excise tax was not integrated into the Goods and Services Tax (GST), the increased tax must be borne by the users of fuel, a major concern for open pit mine operators (especially coal) when it is impossible to pass on such added costs to foreign customers.

* Continuing large sales of gold from Canada's official reserves are inconsistent with efforts of the Royal Canadian Mint and the industry to increase the demand for new mine production of gold. These sales by Canada also set an unfortunate example for other jurisdictions where sales of gold could be large enough to seriously depress world markets.

* A consultant's proposal to measures for improving the competitiveness of the Yukon mining industry affords an example of a useful approach to developing mutually supportive strategies to advance economic development. It is desirable that decisions about infrastructure and other elements of a long range development plan be taken in a broad strategic context.

Chapter 1

THE IMPORTANCE OF MINING TO CANADA

The Economic Contribution

Mining is a nation-building industry. Its contribution to Canada results partly from its size and partly from the geographic distribution of mining activity across the nation.

Canada's natural endowment of mineral resources is found in one form or another in every province and territory. These resources serve as the basis for smelters and refineries, metal fabricating plants and industrial materials processing operations in cities and towns in many regions of the country.

Producers of non-ferrous ores, concentrates and metal products, which account for the bulk of MAC's membership, are typically integrated through the four stages of mineral processing: Stage 1 - mining and concentrating; 2 - smelting and refining; 3 - semi-fabrication of minerals and metals; and 4 - metal fabrication. In 1990, the four stages of mineral activity accounted for 4% ($23 billion) of Canada's Gross Domestic Product (GDP), 3% (387,000) of employment, 6% ($10 billion) of capital investment and repair expenditures and 18% ($25 billion) of Canadian exports. (See "The Mineral Industry in the Canadian Economy" by A. Simonowski and J. Currie, InfoMAC, July 1991, pp. 2-3.)

Some 115 communities with a population of almost 1 million depend upon mining directly and indirectly. In many instances mining is the backbone of a community's economy, particularly in rural regions remote from population centres and where natural advantages apart from mineral reserves do not exist.

In some regions mining is the mainstay of the economy over a wide area. For example, in the mid to late 1980s, mining accounted in some years for as much as 43% of the value of GDP in Canada's two northern territories.

Mining was the driving force in opening up many regions of Canada to settlement and industrialization. It has been described by one industry leader as "Canada's best regional development program". As to the future, in Canada there is still much land of high or unknown mineral potential that remains to be investigated more fully to determine the commercial mineral potential. As one specific example, on Indian reservations further geological surveying and mapping is needed to identify locations that could be promising for mineral exploration.

A Force for Unity

Many member companies of MAC and of the provincial and territorial mining associations and chambers of mines have operations in more than one Canadian jurisdiction as well as overseas. Canadian mining companies are accustomed to working in a variety of geological, climatic and political situations and employing people of different cultures and languages.

This breadth of viewpoint and experience common to mining industry leaders and managers brings distinct advantages when the industry operates at home in Canada. The industry has urged the prompt settlement of aboriginal comprehensive land claims in the North on terms satisfactory to the native peoples involved. Also the industry has established with the Tungavik Federation of Nunavut a Joint Inuit/Mining Industry Committee to work for a mutually satisfactory implementation of new ownership and regulatory regimes as the claims are settled. The industry wishes to establish similar direct relationships with Indian and Metis groups as well. Progress in training and hiring of native employees is encouraged by MAC and carried forward by individual mining companies.

The Canadian mining industry has supported the Canada-United States Free Trade Agreement and also the current Uruguay Round of multilateral GATT negotiations as means of reducing tariff and non-tariff barriers to international trade. The industry wishes to see its market opportunities enlarged and encouragement given to the further processing of minerals in Canada. The industry also supports the removal of barriers to inter-provincial trade within Canada. More fundamentally, maintaining the Canadian economic union is a *sine qua non* of a strong and prosperous Canadian mineral industry.

In the course of operating in all parts of this nation, Canadian mining companies move their executives and other employees across many of the regional barriers that often divide Canadians. A knowledge of the different parts that make up Canada helps to foster an appreciation of the whole. Like many other businesses that operate beyond a local base, the minerals industry flourishes best in a stable political environment. While remaining open to needed political changes, the industry remains strongly committed to a united Canada.

Chapter 2

GLOBAL OPTIONS FOR CANADA'S MINING INDUSTRY

Intensifying Global Competition

It is a truism to say that the world economy is becoming more highly integrated and interdependent. A country can no longer shelter its companies and its people from competition. Global rationalization is taking place in transportation (e.g. airlines), services (e.g. banking) and manufacturing (e.g. automobiles) all around us.

These same forces are operating in the resource industries. While Canada has a significant mineral resource endowment and a strong mining industry, their future contribution to Canada is not assured unless both industry and governments adopt strategies to build on these advantages and to respond to global competition.

The global challenge facing the Canadian mining industry has been described by Prof. Peter R. Richardson of the School of Business of Queen's University. North American mineral producers are finding it increasingly difficult to sustain an outstanding earnings performance. Traditionally, business cycles have resulted in over-capacity and depressed profit margins, but mining industry fortunes have usually recovered with improving prices. But during the past decade, he observes, even producers with "world class" orebodies and metallurgical facilities earned only marginal returns even in periods of high prices. He cites a parallel with North American manufacturers who have lost ground to increased competition from Europe and the Far East. As a result of increasing global competition, he suggests, profit margins in the North American mineral industry have been insufficient to sustain an adequate level of reinvestment in exploration and in modern production facilities. (Peter R. Richardson, "World Class Mineral Operations", CRS Perspectives, June 1991, p.2)

In the following passage Richardson describes both the situation and a possible response:

> " North American mineral corporations face increasingly tough global competition, declining margins, fierce domestic competition for skilled employees, and greater environmental regulation than their foreign competitors. They will have to adopt similar strategic responses if they wish to survive and grow. As with manufacturing, one option is to move operations off-shore, to countries such as Chile, Botswana and Brazil where environmental and operating regimes are more hospitable. However, political instability, social unrest and other factors in these countries can offset the operational advantages." (p. 2)

Because of intensifying global competition, it is essential for Canadian mining companies to develop into world class competitors if they hope to survive and prosper.

In a global market environment, a company's major investment decisions must be based on its global options. The company must decide where to explore, which mineral prospects to develop, which of its existing operations to expand, maintain or close, and where to build or expand smelters, refineries and fabricating plants. These decisions may have far-reaching effects on Canadians well-being.

A company will make these decisions at least partly in response to the assets and liabilities (as it sees them) of Canada versus other countries or of one jurisdiction in Canada versus another. Political stability, social conditions, macroeconomic policies and specific policies of governments will all be taken into account.

While mineral deposits are "where you find them", a Canadian mining company's exploration dollars are portable. A company may have to decide whether to invest in exploration in Canada, the United States, Zaire or Chile. Canadian companies and executives would prefer to operate in Canada. They do not wish to indulge in "cross border shopping". But the forces of competition are inexorable and managements have a duty to their shareholders to seek the best returns. That is why the policies of governments in Canada that influence investment decisions are of particular importance at this point in the development of Canada's mineral industry. They can have a profound effect on the future shape of our industry.

Canada's Balance Sheet in 1991

From the standpoint of the mining industry, what then are Canada's assets and liabilities as they bear on the industry's long term investment decisions?

A familiar list would include:

Assets

* Large known reserves of minerals with a reasonable expectation of finding more, though possibly at increasing cost;

* A competent, well educated labour force;

* Generally strong infrastructure to support commercial operations, including a strong data base of geological surveys and mapping, roads in inhabited areas and government services of many kinds;

* A Canadian standard of living that is high relative to many industrialized countries, providing a market for a wide range of commodities and services;

* A democratic political system that has proved stable and adaptable to social change over the long term; and

* A generally high level of competence and honesty in government services in all jurisdictions.

Liabilities

* A small domestic market of less than 27 million, of which 16 million reside in the central provinces of Quebec and Ontario;

* Difficult conditions, including long distances and severe climatic conditions; and

* Resulting long hauls and high transport costs for a relatively small population.

To an important extent governments can help to offset some of the inherent liabilities of operations in Canada rather than leaving the whole burden of geography and climate on the backs of producers who must compete in the global market. Note that for the Northwest Territories, an area of generally high mineral potential, condition are most severe, and infrastructure the least developed, of any in Canada. In the past, governments have taken important initiatives in the development of geological surveys, transportation networks and navigational aids, national research organizations and trade commissioner services overseas.

All of these examples of assets and liabilities and of government initiatives which tend to undergird and strengthen commercial activities in Canada are incomplete. They nevertheless remind us of the continuing, strong role which governments in Canada can play to make Canada viable and prosperous.

At the present time, as the mining industry reacts to intensifying global competition, companies are conscious of certain liabilities imposed by governments in Canada that are capable of tipping long term investment away from Canada. A number of these liabilities are in the regulatory area and involve the swift pace of regulatory change, uncertainties as to future rules governing exploration and development of mineral deposits and the responsibilities for site reclamation, or long delays to major projects. Sometimes it is the cumulative impact of regulatory requirements, uncertainties, delays and costs that affect the investment decision.

Many of the top issues facing the mining industry in Canada today relate to potential "liabilities" which governments could, by well chosen, judicious actions and strategies, minimize or offset. Much of the remainder of this submission is therefore devoted to exploring strategies which governments (or governments and industry jointly) can follow which will remove these liabilities or enhance Canada's ability to develop its mineral endowment for the maximum benefit of its people.

Chapter 3

STRATEGIC MANAGEMENT OF MINING ISSUES

The "Sunset" Fallacy

A common fallacy too often accepted uncritically in both public and government circles is that the resource industries (and specifically mining) no longer contribute substantially to Canada's economic prosperity and that "high tech" and the service industries are the way of the future.

The evidence for this view is scanty and largely based on preconceptions. Intensifying global competition does not mean collapse if the Canadian mineral industry finds ways to improve its competitiveness. The public's concern for the environment is being met by the industry's award-winning advances in environmental technology and reclamation. Only the uninformed harbour wrong images of the mining industry as spoilers of the environment and call for an end to mining. Similarly, questions about the adequacy of Canada's base metal reserves or about the likely success rate of finding commercial reserves can be answered through analysis rather than conjecture. And the sun need not set on the Canadian mineral industry if governments are aware of such perils as unreasonable shrinkage in areas available for mineral exploration and development or burdensome, costly, uncertain regulation of the industry.

Furthermore, the evidence contradicts the notion that the mineral industry, of all Canadian industries, is unable to respond to competition. In fact, the reverse is true. In the 1980s, metal mining set the pace for Canadian productivity improvements. Nor is global competition limited to the resource sector. Canadian financial institutions, aviation manufacturers, electronic equipment producers and even the merchant in the mall face strong foreign competition today . High tech and service industries are not immune from keen competition, nor does reliance on them guarantee Canadians an easy life.

The Canadian mining industry most assuredly refuses to walk into the sunset. By working out strategies for survival and growth today, companies are positioning themselves to meet a future of challenge and change. By reviewing and revising their mission, roles and strategies, mining industry associations are trying to serve the industry better, specifically in its relations with governments and the public.

Mineral Industry Response to Global Competition

In his article on "World Class Mineral Operations", Prof. Richardson elaborates on the strategies which North American mineral producers must develop to succeed in the global materials business in the future.

He suggests that mining in North America is similar in many ways to manufacturing, that it faces the same competitive pressures from Third World producers and that the mining industry can adapt the best experience in North American manufacturing to transform its operations and financial returns. In some detail Richardson specifies what mineral producers must do to apply the world class managerial philosophy to operations and finance. The objective is to attain the quantum improvement in performance necessary for the North American mineral industry to retain its position among the world leaders. In essence, his advice is as follows:

> " Following the lead of their manufacturing counterparts, mineral industry executives have to totally re-think the parameters and structure of mineral operations down the entire integrated value chain to generate order-of-magnitude improvements in productivity, cost, quality and production cycle times." (page 11)

For individual companies Richardson proposes strategic decisions with respect to operations and finance that will position the Canadian mineral industry advantageously for the future. More and more, MAC's member companies recognize that strategic long-term decision-making and planning is an absolute requirement for adapting to changing circumstances.

Strategic Responses to Government-Related Issues

While mining companies may adopt highly individual strategies to improve their own performance, they may choose to act jointly or through the mining associations in dealing with external issues, notably those involving government policies and actions.

Under the influence of member companies, the mining associations too are developing new strategic management approaches to deal with the top government-related issues that also are crucial to the industry's future. All efforts to improve company performance may be in vain if government actions impede or fail to support the mining industry's efforts to improve competitiveness.

As one example, the senior mining executives serving on MAC's Board of Directors in 1991 embarked on a strategic planning review to improve MAC's service to its members and its effectiveness in dealing with urgent, long term issues. Using a consultant, Ernst & Young, MAC revised its mission statement, redefined its roles and adopted an "issue management" process for responding to issues in close collaboration with the provincial and territorial mining associations.

A number of other associations have also taken formal steps to improve their long term strategies, including the Mining Association of British Columbia, the Ontario Mining Association, l'Association Minière du Québec Inc. and the B.C. and Yukon Chamber of Mines.

In the initial stage of its strategic planning review, MAC Executive Committee members identified a number of issues which they rated according to importance. Drawing on the list of "top issues" and on subsequent discussions by the MAC Board and member company executives, this presentation will comment on seven government-related issues of concern to Mines Ministers. These seven issues are:

* Environmental performance in the mining industry;

* Growing regulation of mining: uncertainty and the burden of compliance;

* Mine reclamation, decommissioning and post-closure obligations;

* An unfavourable public image of mining;

* Access to and use of lands for mineral exploration and development;

* Attaining adequate levels of education, training and skills and satisfactory human resources; and

* Government management of the economy, the investment climate and the infrastructure for mining.

Each issue is discussed in a separate chapter with respect to two aspects: (1) industry's initiatives and strategies, and (2) options for government strategies. Where joint industry/government initiatives exist or appear possible, this type of long term approach to the issue will also be considered.

Chapter 4

THE MINING INDUSTRY AND THE ENVIRONMENT

Statement of the Issue

The mining industry's environmental performance is a function of applicable technology, standards set by governments and company priorities, investment and environmental practices. Government regulation of the environmental aspects of mining operations reflects a mix of scientific evidence, public perceptions of mining, reasonable or technically attainable standards of environmental protection and the philosophy and priorities of the particular government.

With rising public expectations as to protection of the environment, governments are inclined to raise required standards of performance and to tighten and multiply regulations. The mining industry recognizes the need for environmental sustainability but is concerned about regulation that is not scientifically based, or that is technically unrealistic or unnecessarily burdensome and costly. Industry is also concerned that governments may tighten the regulatory net unduly if the public fails to recognize the high standard of environmental performance already attained.

Relevant mining industry strategies are directed, first, at continuing to improve performance where shortfalls exist and, second, at gaining appropriate recognition of the achievements and progress of the industry in protecting the environment and complying with regulations.

From the industry's perspective, it is important that governments adopt farsighted strategies for protecting the environment that effectively balance objectives for protection with industry capabilities, that set clear rules and guidelines for industry compliance and that promote a wide public awareness of the industry performance. In addition, governments can influence, either positively or negatively, the financial ability of mining companies to carry out their responsibilities for environmental protection. Such activities need not be subsidized, but equitable tax treatment of expenditures for such environmental purposes as mine reclamation and the avoidance of costly regulatory burdens can materially assist mining companies to perform these responsibilities.

The issue of "regulatory burden and cost of compliance" is sufficiently distinct and important that it is the subject of a separate chapter. (See Chapter 5.)

Industry Initiatives

In one of its strategic planning workshops, MAC's Executive Committee discussed the state of environmental performance by the mining industry and whether public and governmental perceptions match the industry's performance. The consensus in the workshop group was that the industry needs to improve its image with respect to environmental performance. There was also agreement that changes in image will require demonstrated progress in reducing the environmental impacts of operations.

Elements of an industry strategy were identified in the following categories:

- Environmental performance:
  - * Use MAC's Environmental Policy and Guidelines to encourage industry members to maintain the highest standard of environmental management;
  - * Consider implementing further aspects of self-regulation;
  - * Demonstrate the industry's commitment to sustainable development;
  - * Measure the improvement in industry performance.
- Dealing with the public and interest groups:
  - * Publicize measured improvements in performance;
  - * Distribute MAC's Environmental Policy and codes widely;
  - * Respond to concerns of activists, and communicate directly with them;
  - * Tell "success stories".

Specific roles were suggested for MAC to support industry self-regulation, for example, by encouraging compliance with the industry policy and guidelines and by developing, with provincial mining associations, a program of Emergency Response.

The workshop group recommended also that MAC should, first, develop a more detailed proposal for dealing with this issue and, second, begin defining the elements of a management system for environmental performance.

Current activities within MAC are not the only sphere of action to improve environmental performance. The Mine Environment Neutral Drainage ("MEND") program is continuing its work on improving technology with respect to acid mine drainage. Individual companies are also a focus of research and technical advances which will improve their all round capability for protecting the environment in the course of mining, smelting and refining operations.

Strategies for Governments

Government actions which will enable the mining industry to optimize its environmental performance fall into three main categories: (1) setting objectives and standards for protection; (2) providing financial incentives and equitable tax treatment; and (3) promoting public awareness of environmental performance.

In setting objectives for environmental protection, governments commonly consult with affected stakeholders, a practice which MAC welcomes and supports with its active participation. Where such consultation is lacking or perfunctory, experience has shown that major public policy errors can occur. Through consultation, government officials become better informed about the industry's circumstances and capabilities and mining executives are made aware of the aims and goals of the government. Information sharing provides a good basis for development of workable regulation under which mining companies can improve their performance as their technical capabilities grow.

A variety of government actions can affect, positively or negatively, the ability or incentive for mining companies to improve their environmental performance.

Requirements for up-front funding to cover environmental responsibilities may add to costs depending upon the nature, amount and form of the requirement. If these costs are significant in the economics of the project, a higher expected rate of return will be necessary to attract investment. A marginally profitable project may be dropped.

Unfavourable tax treatment of expenditures for environmental purposes can have a similar deterrent effect on mining projects.

Where governments add to project costs either directly or by a denial of even-handed tax treatment, in theory there is a disincentive to spend on environmental protection. In practice, the effect is unlikely to be reduced environmental performance unless financial capacity to provide it is impaired. Today a project is unlikely to be allowed to proceed by either government or company if the level of environmental performance is likely to prove unsatisfactory. The viability of a marginal project is more likely to be at stake than the environmental performance.

On the other hand, governments may offer strong encouragement to good environmental performance. A few examples will suffice. If future guarantees are required, tax treatment can be adjusted to offset at least part of this added cost. Positive financial incentives may be offered for research and development that promises technical improvements and lower cost reclamation practices. Investment in plant modernization may be encouraged where accompanied by significant improvements in environmental protection.

Finally, governments may assist industry to publicize good environmental performance. Award programs, published studies of performance and speeches by leaders of government are a few of the many means available. Good examples of how the mining industry has responded to environmental concerns can allay public apprehensions about the industry's ability to deal with future impacts.

The pursuit of sustainable development is an ongoing objective. No short term fix is feasible. As a result, both governments and the mining industry itself must plan long term measures to bring about improvement in technical, operational and financial terms.

In addition, joint programs might be developed that utilize the expertise of the mining industry to assist governments in the event of an environmental emergency. The Ontario Mining Association for example has offered to assist the Government of Ontario on emergency environmental matters as they pertain to the mining industry (such as a tailing dam breakdown). The mining industry elsewhere in Canada also stands ready to provide technical advice and expertise to various governments in similar circumstances.

Industry believes that it would be advantageous for governments and the mining industry jointly to take a strategic approach to mining and the environment and to increasing public awareness.

Industry therefore recommends:

Recommendation

1. **That Mines Ministers commission a joint task force of government and industry to review the industry's environmental performance, to suggest areas for future emphasis, and to increase public awareness of progress in environmental protection in the mineral industry.**

Chapter 5

GROWING REGULATION: UNCERTAINTY AND THE COSTS OF COMPLIANCE

Statement of the Issue

A number of distinct issues in the environment and health areas are linked in the sense that government regulation is growing, and in content, form or process is adding significantly to the mining industry's regulatory cost burden. The costs involved arise from such factors as: delays in project approvals, increasing costs of compliance; uncertainty arising from changes in regulatory objectives and rules; risks resulting from onerous liability requirements; and market restrictions. Risk, uncertainty and delay in themselves add to project costs and deter investment.

The specific regulatory issues may be summarized as follows:

- **Growing regulation and overlapping responsibility for project assessment create an expectation of future higher project costs and uncertainty as to whether valuable commercial mineral reserves can be developed.**

  In British Columbia, for example, the mining industry can no longer assume that mining will be allowed to proceed at specific sites even where the mineral reserves are large and of great economic importance (e.g. Windy Craggy). The situation results from the cumulative effect of growing federal and provincial regulation and jurisdictional overlap.

- **Changing environmental standards and criteria for mining generate uncertainty, delay and expectations of an increasingly unfavourable regulatory climate in future.**

  A stable regulatory climate is a favourable investment climate. Mining companies can adapt to a certain amount of regulatory change, but the prospect of constantly changing rules and standards generates uncertainty about future government regulations. A "safety factor" must be built into investment decisions.

  At present the prognosis for both federal and provincial environmental legislation is for significant changes and a tightening of environmental standards and criteria. The purpose of federal Bill C-13 is to strengthen the Environmental Assessment Review Process (EARP) Guidelines. In the provinces, notably in British Columbia, new mines legislation and mine development assessment legislation with attendant regulations and codes are redefining environmental standards. "Canada's Green Plan" promises further such measures.

- **"Hostile" changes in the rules accentuate the poor investment climate.**

  Certain types of legislation, notably the Environmental Bill of Rights which passed hastily through the legislature of the Northwest Territories and Ontario legislation to impose stricter standards of liabilities on directors and companies, are commonly perceived in the industry as hostile to business and to economic development.

- **International regulatory conventions and standards are on occasion imported into Canada without sufficient concern for possible damage to Canada's resource industries.**

  An example is "market restrictions due to product health concerns". This issue was discussed by members of the MAC Executive Committee in a strategic planning workshop. The issue was characterized as international, being "imported" into Canada from other countries or from international organizations. For example, specific commodities are being regulated on the basis of their intrinsic toxicity rather than the risk they pose to society in use.

  The United Nations Conference on Environment and Development ("Brazil 1992") is a further potential source of regulations to which Canada will be asked to accede. The mining industry is participating in consultation with a view to ensuring that due regard is paid to Canada's unique economy and the interests of its mineral and other resource industries.

Industry Initiatives and Strategies

These issues all tend to increase risk, uncertainty and regulatory costs for the mining industry. A common thread in the industry's strategic response to all of the issues will be, first, to promote improved public awareness of the impact of government actions on mining project economics and investment, and second, to seek a stable, workable regulatory environment in which standards respond to a demonstrated need and are matched to industry capabilities.

Since the issues are of different types, however, mining industry strategies can be expected to vary and to be tailored to the nature of the issue.

As an example, the MAC workshop developed the elements of a strategy for dealing with internationally generated market restrictions. With respect to the federal government, the workshop group suggested, first, that the industry take the initiative to reach an understanding with the government as to the nature and impact of the issue, and secondly, to urge that risk assessment should be incorporated in the government's policy development process and in international negotiations. This strategy would be complemented by a North

American response to the public, including the Washington press, and by public communication to emphasize the role and importance of metals in use. Finally, the group recommended strategies for dealing with international bodies and for creating an international information network. The group noted steps already being taken in this direction by the International Council on Metals and the Environment, an organization formed in 1991 on the initiative of MAC.

Principles of Regulation

As a more general approach to the problems of growing regulation and increasing risk, uncertainty and costs of regulation, MAC advocates the recognition of certain principles of regulation. These may be summarized as follows:

- Governments should consult as fully as possible with the mining industry and other stakeholders when the industry's operations may be subjected to new or changed environmental or health regulations.

- Standards and criteria should be based on a demonstrated need and should be the least burdensome economically. Their implementation should be reasonably matched to industry's technical and economic capabilities.

- Environmental liabilities imposed on companies and directors should be equitable and relevant to the operations and activities of those regulated.

- The responsibilities of federal and provincial governments for environmental regulation should be clearly defined, and if necessary reviewed and reassigned, to eliminate duplication and ensure that any and all regulatory legislation is complementary rather than supplementary.

- Environmental, social and economic evaluations and eventual permitting of mining developments or related hydro-electric developments that require interactions among government agencies and developers should be coordinated at the highest levels of their respective bureaucracies.

- Where foreign or international actions and conventions could provide the basis for measures or standards for environmental or health regulation in Canada, Canadian government agencies should consult early and closely with the mining industry if it may possibly be affected.

For a government that wishes to promote the integration of economic and environmental decision making, these principles of regulation are a necessary philosophy and practice. Philosophically, a government should seek to regulate in a manner that imposes no greater

burden or costs on equitable regulation. In practising regulation, the government must consult as a matter of course with affected stakeholders, particularly when regulatory standards or criteria are likely to be altered.

Governments in Canada must minimize regulatory duplication. This is a matter of the utmost importance. MAC and the provincial and territorial mining associations consider the annual Mines Ministers' Conferences and the studies which they commission an important means of harmonizing government actions and increasing governmental awareness of impacts on industry.

Joint Government/Industry Action

Consultation between governments and industry on environmental and health regulation is already well established in Canada. In a few instances, particularly with respect to international conventions and standards, lack of consultation in the past has resulted in potential damage to Canadian operations or to its markets for metals. As the MAC workshop group noted, timing of a response to an issue of this kind is crucial. If the issue is already public, it may be too late.

Recommendation:

2. **That the federal Minister of Energy, Mines and Resources work closely with the mining industry and other government departments regarding issues arising in the international or foreign sphere.**

While MAC commends to governments the principles of regulation cited, in general they are not at this time a matter for collective action by the Mines Ministers. One exception is the duplication of federal and provincial regulations in the environment and health field. A joint government/industry task force might usefully review this area and present its findings to a future meeting of Mines Ministers.

Recommendation:

3. **That Mines Ministers consider establishing a joint government/mining industry task force to review duplication of federal and provincial/territorial regulations and assessment processes in the environment and health field as they impact on the mining industry, with a view to achieving greater complementarity in such regulation.**

Chapter 6

MINE RECLAMATION, DECOMMISSIONING AND POST-CLOSURE OBLIGATIONS

The Issue of Tax Deductibility of Expenditures into a Government-Mandated Mine Reclamation Fund

Mines Ministers at the past three annual conferences have received reports from the Intergovernmental Working Group on the Mineral Industry (IGWG) relating to mine reclamation. (See Reports on: "The Economic and Policy Aspects of Acid Discharge" (1988); "Income Tax Treatment of Mine Reclamation Expenditures" (1989); and "Income Tax Treatment of Government-Mandated Mine Reclamation Funds" (1990).)

The "Acid Discharge" report examined the dimensions of the problem and estimated that the burden of reclamation costs for stabilizing acid-generating mine waste and tailings at non-ferrous base metal sites would be significant. The bill would amount to some $150 million annually spread evenly over 20 years, or equivalent to 2.4% of the industry's gross revenue. (pp. 1-2) The report commented that:

> "The impact is comparable to the imposition of a provincial mining tax in the range of 18 to 20% of mine operating profits. However, the reclamation costs would be payable whether or not the mine is profitable." (p. 2)

The report further reviewed the state of technology and the regulatory regime in relevant jurisdictions, and touched upon the tax treatment of mine reclamation expenditures. The two subsequent IGWG reports probed more deeply the matter of tax treatment of mine reclamation expenditures. Included in the conclusions of the 1990 report was the following statement:

> "The IGWG/MAC Task Force concludes that a strong case can be made that payments into a mine reclamation Fund should be treated as a deductible expense for tax purposes. This conclusion is based on arguments for allowing a deduction on grounds of income tax principles, statutory precedents and generally accepted accounting principles." (p.16)

Currently reclamation expenses are deductible as an operating expense when incurred. However, at present, a contribution to a provincially mandated fund in only deductible provided it is "irrevocable" and not in the nature of a royalty or tax. (Administrative policy stated by O. Jelinek, Minister of National Revenue.)

Although some confort can be taken from the position taken by Revenue Canada, it is only an administrative position, with two restrictive requirements: i.e.:

- no part of the contribution may be recovered by the payor;
- no part of the contribution may be a provincial royalty or tax.

Industry, by way of The Mining Association of Canada (MAC), supported by EMR and the Provincial Mines Ministers, has made a proposal to the Department of Finance to amend the Income Tax Act to specifically allow a deduction for a contribution to a prescribed reclamation fund.

Several proposals in respect of the earnings of the fund have also been made:

A. Earnings sheltered from tax until fund balance paid out (in effect, a Registered Reclamation Savings Plan).

B. Earnings remain in the fund, but are taxable to the mining corporation as ordinary income on an as-earned basis. Any fund distribution less amounts of income previously subject to tax would be taxable. (This is equivalent to the Revenue Canada administrative position less the restrictive conditions.)

C. Earnings remain in fund, are taxable as earned, as in B and the whole amount of any distribution is subject to tax.

Industry would prefer A, but has agreed to accept B for the time being, while Finance is proposing C (a "Tax Neutral Option"), which effectively taxes the fund earnings twice, and which is wholly unacceptable to industry.

On July 23 in Toronto, tax experts and other representatives of the MAC, the Québec Mining Association, the Ontario Mining Association and the Mining Association of British Columbia held an abortive meeting with officials of the federal Department of Finance to discuss the issue. Finance officials seemed unwilling to countenance any resolution of the issue that leaves the industry in a more favourable financial situation than under the present tax treatment provisions.

Therefore, it appears that a renewed effort will be required on the part of Mines Ministers to draw the importance of this matter to the attention of the Minister of Finance.

Recommendation:

4. **That Mines Ministers reiterate to the Minister of Finance their recommendations regarding deductibility for Income Tax purposes of expenditures into a government-mandated mine reclamation Fund, and should seek an early reply to their inquiries.**

Other Mine Reclamation Issues

The IGWG reports on tax treatment of reclamation expenditures recognized that an important concern of both the mining industry and governments was the present and prospective requirements by the provincial and territorial governments for different forms of financial assurance to ensure satisfactory completion of company responsibilities for mine reclamation, decommissioning and post-closure obligations. Since the 1990 Mines Ministers' Conference, both the governments through IGWG and the mining industry through MAC and the provincial and territorial associations have continued separate work on this subject. The next section of this Chapter reports on the industry's progress in developing a national position on the issue of what constitutes "reasonable financial assurance".

The MAC workshop discussion of "mine reclamation" concentrated on this and three other issues relating to this general subject. They included:

(1) What standards to achieve upon closing of a mine, whether operating or planned;

(2) How to develop technology to enable industry to meet anticipated requirements for reclamation activities where satisfactory approaches do not now exist.

(3) How to deal with old mines, namely, (a) abandoned mines; and (b) dormant mines owned by a solvent operator.

On the sub-issue of "standards" to achieve on closing of a mine, the workshop group proposed certain goals for industry, namely:

* Return to "no worse than original condition", not "improve the site";

* Retain flexibility of approach for individual companies; and

* For acid mine drainage, apply standards to water leaving the site, not to "end of pipe".

The group suggested that MAC had a role in supporting the efforts of the provincial mining associations in gaining acceptance of suitable standards and also in coordinating with them the development of the industry's position on such matters as "walk away standards".

The workshop group recognized that technology needs to be developed further to enable industry to meet anticipated requirements for some reclamation activities. The MEND program is a particularly important industry initiative since it enables companies to work collectively on the problem of acid mine drainage.

For previously closed mines, the group suggested that if there are solvent operators the operating company should bear the costs of reclamation.

For abandoned mines it was suggested that:

* There should be no recourse to industry;

* Provincial governments should pay the costs of reclamation; and

* An industry-wide "superfund" should be avoided.

With regard to closed mines, MAC prefers the concept of "zero harmful discharge" for defining the standard rather than "zero discharge".

Financial Assurance for Mine Reclamation

In April 1991, MAC in consultation with the provincial and territorial mining associations and the Coal Association of Canada published a discussion paper entitled Financial Assurance for Mine Reclamation, Decommissioning and Post-Closure Obligations. (See Attachment #1.)

Following a series of workshops attended by mining industry decision makers and experts, the discussion paper was prepared as a general statement of the industry's policy. It was understood that individual mining associations or companies might wish to emphasize certain parts of the policy or amplify it to suit local circumstances.

The discussion paper included a statement of the basic principles for legislation which the industry would advise governments generally to adopt. Also included is a discussion of what should constitute "reasonable financial assurance". The paper concluded that:

> "Government requirements for mining companies to provide technical pre-planning and financial assurance for mine reclamation are increasing. The mining industry has responded through consultation and working with governments. The industry further has developed its general position for use in a company or association's discussions with particular governments.
>
> "The industry stands ready to assist governments to develop forms of regulation governing financial assurance for mine reclamation that are effective, economically sound and efficient." (p. 8)

The mining industry reiterates this offer of assistance. The MAC workshop group reaffirmed the need for the industry to influence the coming regulations with respect to mine reclamation financing. The group also restated the industry's strong view that a national or provincial "superfund" should be avoided.

There is also a strong belief in the industry that if a trust Fund is required by government or is chosen by a company, that the Fund should be managed by the company. An independent third party, such as a trust company, is an acceptable trustee of a Fund.

Because of the importance of the financial assurance issue to the mining industry, MAC and the provincial and territorial associations wish to bring the following recommendation, drawn directly from the principles and conclusions stated in the discussion paper, directly to the attention of the Mines Ministers as follows:

Recommendation:

5. That Mines Ministers ensure that sound principles underlie legislation and regulations requiring a company to provide financial assurance of mine "reclamation" (including all requirements to reclaim, to decommission and to meet post-closure environmental obligations). These principles include the following:

   * A proposed mining project should not proceed if adequate reclamation costs cannot be provided for satisfactorily.

   * Each owner of a mine (including a joint venture partner) should be responsible for and should pay for any reclamation costs associated with its operations.

   * There should be no industry-wide superfund to finance all mine reclamation costs.

   * If a trust Fund is mandated by a government, the Fund should be managed by the company. An independent third party, such as a trust company, should be acceptable as a trustee of a Fund.

   * An appropriate phasing-in period for new regulations is necessary to allow mining companies to prepare for compliance.

   * The approved decommissioning plan should be based on standards current at the time of approval.

   * A government should accept the extinguishment of a mine owner's environmental obligations when the objectives of the decommissioning plan have been achieved. There should be a clear procedure and mechanism for having the financial assurance released both as the work is being carried out and upon completion of the work.

* Existing mines should not be called upon to pay the costs of reclaiming mine sites abandoned in the past where there is no recourse to former owners.

* A company with more than one operation should have the option of "pooling" its reclamation costs into a single financial assurance mechanism.

* In addition, in determining what is "reasonable" financial assurance, the government should permit a company, in meeting its obligations, to use an irrevocable letter of credit, performance bond, tax-deductible, government-mandated trust Fund or other forms or combinations of surety acceptable in the circumstances to the particular government.

* Finally, legislation should provide an appropriate mechanism for independent engineering or professional advice, facilitation, mediation and/or arbitration to resolve disputes over the choice of a financial arrangement or the design and operation of a Fund.

(See Discussion Paper, pp. 6-7,9.)

Chapter 7

PUBLIC IMAGE OF MINING

The Problem and Industry's Response

In 1989, MAC and the provincial and territorial mining associations commissioned two surveys which showed that the mining industry does not enjoy a strongly favourable public image. Public opinion research by Angus Reid and the COMPAS survey of policy elites' perceptions indicated a negative opinion of the industry, particularly in such areas of current concern as the environment and health and safety. From this research MAC concluded that without public support and understanding the industry faces a higher probability of harmful government policies.

Following a communications workshop in November 1989 and directives from the MAC Annual General Meeting in June 1990, MAC's Public Relations Committee in consultation with the provincial mining associations prepared a program for communicating with various segments of the public, including politicians and government officials. The public image of the industry was also one of the major issues discussed at the MAC strategic planning workshop in 1991. This discussion preceded approval of the proposed communication program by the MAC Board of Directors in March 1991.

The proposal stated the problem faced by the industry in these terms:

> " Governments and Canadians as a whole have little understanding of the industry. They appreciate the economic contribution of the industry but have some deep concerns about its environmental performance. They do not know what the companies have done and are doing in this area to improve performance and to respect the environment. Moreover, statements of industry executives on environmental matters carry little credibility.
>
> " Such a combination of dissatisfaction and disbelief constitutes a crisis for industry that can lead to a more difficult regulatory and legislative climate. Several worrisome initiatives have been taken in the last five years alone: The Green Plan, Transportation of Dangerous Goods Act, Hazardous Waste restrictions, WHMIS, MISA, the EPA asbestos ban, and some others. Still, the mining industry is taking major steps to improve its performance in areas of environment and health, sometimes going beyond legislative and regulatory requirements. Unless the general public and governments are aware of the industry's efforts and performance, it is likely that restrictive legislation will continue to be implemented."

The proposal identified four key areas of challenge to the mining industry:

* Adverse regulation and legislation;

* Negative or mistaken perceptions;

* Adversarial relationships; and

* Past performance of the industry.

Further, the proposal identified objectives for the industry and strategies for 1991 and subsequent years. Several projects were proposed, highest priority being for a "communications audit". The purpose of this project is to assess the industry's communications efforts, improve coordination with the mining industry and build a base of information.

Mines Ministry Initiatives

The mining industry's public opinion research indicated a need for greater accuracy in governmental (as well as general public) awareness of the place of mining in the economy, the environment and society. At the same time, just as farmers generally regard departments of agriculture as their most understanding advocates in government circles, so the mining industry appreciates the role of ministries of mines in conveying to other departments of government an accurate understanding of mining.

In current circumstances, however, the mining industry sees a need for upgrading and broadening the role of mines ministries in promoting an awareness of mining at both the federal and provincial levels. By extension, this enhanced role would also be aimed at greater understanding of mining by the general public as well.

More specifically, the mining industry considers that ministries of mines have already developed very high standards for geological mapping and locating and assessing mineral occurrences. These same high standards of professionalism should also be consciously nurtured with respect to other mining-related concerns such as land use for parks, recreation areas watersheds and native land claims. Furthermore, this expertise should not be limited to mines ministries but should be inserted into decision making in other ministries that regulate or influence minerals exploration and mining activity.

Recommendation:

6. That mines ministries undertake an enhanced role in communicating their expertise on a wide range of issues relating to mining to other departments of the federal, provincial and territorial governments. Awareness programs should be developed in mines ministries to promote a wider, more accurate understanding of the importance and role of mining in the economy and society on the part of government decision makers and the general public.

Chapter 8

ACCESS TO AND USE OF LANDS

Land Use Issues

Access to and use of lands on reasonable terms for mineral exploration and development was identified by senior mining executives in the MAC strategic planning exercise as one of the "important" issues facing the industry today.

Land use issues arise largely because of restrictions of various types that are placed on minerals exploration and development. While many areas of Canada can be identified as having high or low mineral potential, in the current state of technology and geological knowledge, no region can be ruled out as a possible location for commercially viable non-fuel mineral reserves. Accordingly, exploration for base metals and for precious metals must take place over a wide area. If the land available for exploration shrinks because of restrictions on its use, then opportunities to tap Canada's mineral endowment are proportionately restricted.

Some currently relevant questions are:

* What are the local and cumulative effects on mineral exploration and development of existing and prospective land use restrictions and withdrawals?

* Are assessments of the mineral potential of lands sufficiently taken into account in decisions to withdraw lands or restrict their use for mineral activity?

* To what extent are native land claims an important factor in land withdrawals from the standpoint of the mineral industry, or how can access on reasonable terms be preserved?

One source of shrinkage of lands available for exploration and development is the move to create new parks and other protected areas. In "Canada's Green Plan", it is stated that presently about 6.9% of Canada's land and freshwater area is in protected areas under different jurisdictions and conservation agencies. About 1.8% of Canada's non-marine territory is protected in national parks. The federal goal is to have each of Canada's 39 terrestrial regions represented in a national park. The national parks system will then be complete and will cover about 3% of Canada's land area. National wildlife areas and migratory bird areas also are components of Canada's system of protected lands. The federal government in the Green Plan has stated that, following the recommendation of the Brundtland Commission, "we must accelerate our efforts toward meeting the target of setting aside 12% of Canada's total territory as protected space". (Canada's Green Plan in Brief, pp. 79-80.)

The degree of restriction on mineral activity varies from one type of protected area to another and from one jurisdiction to another. In addition to the forms of environmental protection restricting land use that are cited in the Green Plan, substantial areas are also restricted for other reasons, such as native land claims, defence facilities and urban areas. The total impact on mineral exploration and development of all forms of restriction on land use has never been adequately assessed. An industry initiative to establish an adequate data base for this evaluation is described in the next section of this chapter. The other questions relating to land use and mining are considered in subsequent sections.

Land Withdrawals and the Mineral Industry Land Use Committee

A major problem for the continued orderly development of Canada's mineral resources is the increasing alienation of land open for exploration and the resulting foreclosure of opportunities to bring a mine into production. In the late 1980s the problem escalated through the cumulative effect of increased environmental concerns, a move to expand Canada's system of national parks (where mineral exploration and development by statute are banned forever) and the growth in other types of protected areas, including provincial parks, where such activities are restricted in varying degrees.

In response, MAC, the Prospectors and Developers Association of Canada (PDAC) and the provincial and territorial mining associations formed what is now known as the Mineral Industry Land Use Committee (MILUC) (or Comité de l'Industrie Minérale sur l'Accès au Territoire - CIMAT) composed of representatives of all the associations. The Committee held its first meeting in Vancouver on June 28, 1989 to design a program to meet the challenge of maintaining the industry's access to lands on reasonable terms for mineral exploration and development.

Initially, the MILUC committee's main concern was the establishment and maintenance of a data base to determine the extent of the problem. Under the chairmanship of Dr. Jack Garnett of Bedford, Nova Scotia and presently under the chairmanship of Dr. Ralph Cheesman of Regina, Saskatchewan, MILUC has developed a computerized, geographic information system to delineate the extent and nature of restrictions affecting such access. In this venture MILUC has benefitted from the cooperation of the Mineral Policy Sector of Energy, Mines and Resources Canada (EMR), Environment Canada and the provincial and territorial departments of mines. The development work was carried out in expert fashion by MILUC's consultant, Earth and Ocean Research Ltd. of Dartmouth, Nova Scotia.

The results of this work to develop the National Land Use Data Base (NATLUS) are being demonstrated at the present Mines Ministers' Conference. Further compilation of data and additional analysis will be required to show more exactly the full extent, location and degree of restriction on use of lands currently withdrawn from mineral exploration and development.

In the meantime, MILUC has become anxious over the apparent haste to implement the proposals in "Canada's Green Plan" for reserving 12% of Canada's land area for national parks and wilderness areas. MILUC believes that the creation of new parks may have significant effects on future mineral development and that MILUC can provide useful input into consideration of the Green Plan proposals. When areas are publicly nominated for inclusion in new parks without prior consideration of their mineral potential, MILUC fears that parks plans will be entrenched in the public mind and no longer "negotiable" in terms of possible multiple use of the lands.

MILUC is conscious of the long history of governments and industry working together for the orderly development of Canada's mineral resources. To maintain this development requires a strong advocacy role for mines ministries in dealing with other government departments responsible for the environment, parks, native affairs and other matters that impinge on mining activity. This is a further reason for advancing Recommendation 6 in the previous chapter of this presentation. Other government departments and the public should be informed of the need to approach land use issues in a context of "integrated resource management" in the wider field of "sustainable development".

In addition, it is important that the federal, provincial and territorial governments continue to cooperate with MILUC in the supplying of information for incorporation in the NATLUS data base. MILUC intends to continue to maintain and update the data base using this information. MILUC further intends that the system shall be equally accessible to all parties, whether private sector or government, that are involved and interested in sustainable development and land use planning.

In future, once an adequate land use data base is established to demonstrate the impact of land withdrawals on mineral exploration and development, MILUC intends to shift its focus to communication of land access issues and solutions to governments and to the public.

Recommendation:

7. **That federal, provincial and territorial governments continue their support and provision of data for inclusion in the National Land Use Data Base (NATLUS). Because of MILUC's policy of open distribution of output from NATLUS, contributors to the system are encouraged to provide relevant information sets under conditions that will not impede the broadest possible, appropriate distribution and use of the capability.**

New Parks and Mineral Resource Assessments

There appears to be a significant discrepancy in the estimated size of the national parks system once it is completed. The area of proposed new parks was estimated for the Green Plan but MAC has the impression that the exact extent was not precisely determined. The Mineral Policy Sector of EMR has projected the possible extent of the new parks on the basis of average park size. Assuming that a park of average size is created in each of the 18 natural regions not yet represented, ten new national parks of an average size of 24,000 sq. km. would be created in the North and eight new parks of 1,062 sq. km. each south of 60 degrees. The area of future lands to be occupied by national parks would thus be 240,000 + 8,496 = 248,496 sq. km. Added to 210,419 sq. km. of existing parks, this would make a total of 458,915 sq. km. or approximately 4.6% of Canada's land mass in national parks by 2000. This represents an area closed to mineral exploration and development three times the size of Nova Scotia, New Brunswick and Prince Edward Island combined.

This estimate differs from the Green Plan estimate of 3% of Canada's land area in national parks. The Resource Management Division of EMR is currently undertaking an analysis which will calculate more precisely the extent of the new parks and their effect on mining.

The variability in possible extent of the national parks system and its effect on shrinking mining opportunities is itself an issue. The large extent of the area potentially withdrawn also adds significance to the question: Is there an adequate assessment of mineral potential before new parks are created?

Mines Ministers will be familiar with the MERA process for evaluating mineral potential before new parks are created in the territories. With respect to the possible creation of ten new parks in the North by 2000 the mining industry has two concerns:

* That the Geological Survey of Canada will be assured of sufficient resources and expertise to complete high quality MERA assessments for all new parks; and

* That MERA assessments will be conducted at an earlier stage in the process of park land selection; in this way, park boundaries will not become entrenched in official and public thinking so that the possibility of adjusting park boundaries to remove areas of high mineral potential is reduced.

Recommendation:

8. **That Energy, Mines and Resources Canada be closely involved in the process of selection of lands for new parks and should be allocated sufficient funds for the Geological Survey of Canada to undertake a high standard of evaluation of mineral resource potential early in the process of selecting lands for each of the new parks.**

Aboriginal/Mining Industry Cooperation

Native land claims are a further reason for withdrawals of lands from mineral exploration and development, though generally only for a temporary period. Unsettled land claims, however, place a question mark over the eventual disposition of large tracts of land. Even an interim withdrawal of lands from industry activity pending settlement of a claim or during land selection puts a halt to further exploration and development. Development prospects are clouded in the North and in several provinces, notably British Columbia, by unresolved aboriginal claims. For these reasons, the mining industry seeks a prompt and satisfactory settlement to all outstanding aboriginal land claims.

The mining industry is well satisfied with the opportunities for consultation with the Department of Indian Affairs and Northern Development (DIAND) and with government and native negotiators following the publication of agreements-in-principle in the main comprehensive land claims in the Yukon and Northwest Territories. The mining industry is further convinced that there are good prospects for a smooth transition to new land ownership, land use planning and regulatory regimes in the Tungavik Federation of Nunavut (TFN) and Council for Yukon Indians (CYI) settlement areas.

To create added opportunities for direct contact and cooperation, the TFN and the NWT Chamber of Mines, the PDAC and MAC in September 1990 established a Joint Inuit/Mining Industry Working Committee. As time goes on, this Committee should be a focus for improving understanding between the Inuit and the mining industry regarding the whole range of opportunities and potential problems created by the introduction of the new land use regime. The mining industry is very hopeful that it will succeed.

The mining industry has also proposed to the CYI that a similar joint working group be established in the Yukon with representatives from the Indian bands and the mining industry. This proposal is now under consideration by the Indian bands.

MAC has no specific recommendations to governments with respect to the arrangements which it is establishing on a direct basis with the aboriginal peoples. At the same time, MAC believes that an early settlement to the native land claims will prove advantageous both to the native peoples themselves and to the mining industry. In particular, the industry hopes that it may prove possible to complete an Umbrella Final Agreement this year in the CYI claim and that it may be possible to resolve remaining problems so as to complete satisfactory agreements with the Dene and Metis peoples in the Northwest Territories.

Recommendation:

9. **That Mines Ministers use their good offices to seek a prompt and satisfactory settlement of outstanding native land claims in the North and in British Columbia.**

Chapter 9

HUMAN RESOURCES, EDUCATION AND TRAINING

Educational Strategy

Competitiveness of the mining industry depends to an important degree on the availability of well educated, skilled employees, trained for their immediate roles and able to adapt to changing conditions and requirements over their working lives.

MAC Executive Committee members rated "skill levels and training" as an "important" issue for the mining industry. "Mature" issues identified included several issues relating to human resources: "labour force management"; "matching supply and demand for manpower"; and "use of professionals in key areas".

These are issues for which initiatives from governments, labour and industry and from all three collectively will be useful to ensure fulfilment of industry's need for a skilled and adaptable work force and the employee's need for a meaningful career. In July two federal government working papers appeared, one on education and the other on competitiveness. These papers may spur a dialogue in which the views of industry and labour will be taken into account. For mining, as for industry in general, higher skill levels should contribute to better competitiveness.

In general, mining companies expect that governments will equip potential employees in any with at least a basic education and skills. This is the task mainly of the provincial and territorial governments, the relevant educational programs being delivered by local school boards or by colleges and universities. Mining companies then expect to add vocational training for the specific tasks of mining. A certain basic level of education and skills will be required, however, before the vocational training can be effective.

Opinions may differ within the industry as to the adequacy of general levels of education in Canada. Undoubtedly there is some dissatisfaction. The federal study of education is welcome if it throws light on the means of improving the provision of basic education and skills.

In addition, mining executives are aware of many situations and locations where cultural and geographic factors and a sparse population (as in the North) may limit a company's access to a sufficiently educated and skilled supply of workers, particularly locally. By and large, mining companies prefer to hire local labour if they can. The industry therefore supports programs that make education and the attainment of basic skills more available to native peoples and to residents of remote communities.

Human Resources Study of the Mining Industry

With its concern for human resource issues, MAC earlier welcomed the initiative in June 1990 by John MacDougall, M.P., Parliamentary Secretary to Hon. Jake Epp, Minister of EMR, to study mining trades training issues. MAC then jointly with the United Steelworkers of America and the Canadian Institute of Mining, Metallurgy and Petroleum requested that Employment and Immigration Canada undertake the proposed study. In announcing in June 1991 that the government would take this action, Hon. Bernard Valcourt, Minister of Employment and Immigration, said:

> "This study will assess the nature and extent of the industry's human resource requirements. I am pleased to see industry support for such a pragmatic and collaborative approach aimed at developing a strategy for an industry facing human resource challenges and committed to remain a world leader in its field.' (Press Release, June 14, 1991)

MAC is willing to assist in the conduct of this study and anticipates with great interest receiving its results and recommendations.

Aboriginal Participation

The mining industry recognizes that there are special requirements for effective native participation. Governments are increasingly sensitive to the need for input from the aboriginal groups themselves and from industry in the design of programs to encourage native participation in the industry.

MAC believes that the IGWG Task Force on Native Participation in Mining has an important assignment. Its survey of native participation in the mineral industry will afford valuable basic information about the existing involvement in mineral-related activities, lifestyles in the native communities and opportunities for natives to obtain adequate schooling and training.

Programs should be developed now to increase the opportunities for native participation in mineral exploration and development, mining operations and in small businesses connected with mineral-related activities. Development of these long range strategies is urgent for the native peoples, for the mining industry and for Canada as a whole.

Recommendation:

10. **That Mines Ministers give a high priority to the continuing work of the IGWG Task Force on Native Participation in Mining and encourage industry involvement.**

Chapter 10

MINERAL EXPLORATION ISSUES

A parallel submission on behalf of the Canadian exploration industry is being presented to Mines Ministers by the Prospectors and Developers Association of Canada (PDAC). Accordingly, we will comment only briefly on several issues of interest to producers.

Adequacy of Base Metal Reserves

Government programs to assist mineral exploration by favourable fiscal treatment of financing by means of "flow-through" shares produced a boom in exploration in the late 1980s. Much of the exploration was devoted to a search for precious metals. Simultaneously, senior mining executives were expressing their concern about the adequacy of Canadian base metal reserves to sustain future mining and refining operations in Canada.

The Mineral Policy Sector of EMR has conducted extensive studies of mineral discoveries in Canada and has published many of its findings. The work of Dr. Donald Cranstone in this regard is particularly noteworthy.

In addition, the Centre for Resource Studies at Queen's University has published valuable studies of the extent and significance of mineral reserve discoveries in Canada. The research of Prof. Brian Mackenzie and his associates in this area is notable and continuing.

There remains, however, a need for further factual information and analysis to provide a framework for future federal and provincial government strategies to influence (or refrain from influencing) the level of exploration for base metals in Canada. The study should answer the following important question:

> Is current exploration in Canada sufficient to sustain Canada's share of future additions to world base metal reserves?

A judgment remains as to how this criterion of "maintaining Canada's present share" of base metal reserves applies to any government's tax, incentive and economic development policies. However, the provision of more definitive factual information in answer to this question should improve the quality and relevance of decisions in this area of government policy.

The PDAC and MAC are exploring options for commissioning an investigation of this question of adequacy of exploration to sustain the present (or a greater or lesser) level of base metal reserves. The two associations believe that it is in the general interest of governments and of the industry to have more definitive facts which may aid them to develop strategies for influencing future levels of mineral exploration in the different jurisdictions and in Canada as a whole.

Recommendation:

11. **That the mining industry and EMR work cooperatively to enhance the published base of factual information relating recent exploration rates to the goal of sustaining Canada's level of reserves of base metals.**

Geological Surveying and Mapping

Mineral development in Canada will also benefit from sustained, high quality geological surveying and mapping in all regions of Canada. In some jurisdictions, such as the Northwest Territories, an increased level of effort is warranted to improve basic knowledge of mineral potential. A number of Indian bands have urged that a more intensive program be undertaken to establish the likely mineral potential of lands included in Indian reservations.

The work of the Geological Survey of Canada and of complementary programs in the provinces and territories helps to provide part of the vital infrastructure for mineral exploration and development in Canada. In some regions and situations, the mining industry would like to see these surveying and mapping activities increased. In all regions it is important that they be maintained.

In the Northwest Territories, an area under federal jurisdiction, the industry is concerned that expenditures on geological mapping have been substantially reduced. In the past decade, expenditures by the Geological Survey of Canada (GSC) fell by nearly $6 million or 46 percent, while person-years fell by 41 percent. In only seven years, expenditures by DIAND's Geology Division fell by 20 percent and person-years by 17 percent. Moreover, the GSC's draft Strategic Plan states that less attention will be placed on the North in favour of the South. While funding provided under Mineral Development Agreements is welcomed, it is counterproductive to reduce established ("A-Base") funding accordingly.

There is also additional work for the private sector to undertake to advance the mining industry's capabilities for exploration. MAC Executive Committee members identified as one of the "important" issues: "R&D in exploration technology". The Mining Industry Technology Council of Canada (MITEC) is examining this issue.

Chapter 11

OIL SANDS DEVELOPMENT

Resource Base and Production Trends

While most of the issues and opportunities discussed in this presentation cut across all sectors of the Canadian mining industry and all methods of extracting minerals, MAC wishes to draw attention in this chapter to the opportunities for one particular sector, namely, oil sands mining.

Production of synthetic crude oil in Canada in 1990 (all from Alberta oil sands) amounted to 12,032,500 cubic metres (m3) or 12.5% of Canada's total production of crude oil and equivalents. This synthetic crude oil was valued at $2,068 million or 13.8% of Canadian crude production in value terms. (MAC, Mining in Canada: Facts & Figures 1991,Table 20, p.47)

The importance of the oil sands is not only in terms of more than $2 billion of annual current production. Their importance is all the greater because of an expected decline in future Canadian production from conventional reserves of petroleum.

The extensive oil sands and heavy oil resources in Alberta present a significant alternative to the declining conventional petroleum reserves which have been the driving force behind a vital energy industry in western Canada. Alberta's total reserves of conventional crude oil, natural gas, heavy oil and oil sands represent more than 90% of Canada's total in these categories. Of these, heavy oil and oil sands constitute more than 60% of Alberta's total remaining proven recoverable reserves. The most recent report of the Alberta Energy Resource Conservation Board (ERCB) estimates the initial in-place volume of crude bitumen at 266.5 billion cubic metres (1,676.82 billion barrels) in both in-situ recovery and surface mineable categories. These massive crude bitumen reserves are contained in sand and carbonate sedimentary formations in the Athabasca, Cold Lake and Peace River oil sands areas.

Current forecasts point to a decline in conventional reserves as production exceeds new discoveries. This trend is expected to continue with fewer and smaller prospects remaining to be discovered. Over the past two years, the decline in light crude production has been more severe than expected.

In 1989, Alberta's production of light crude was some 6% less than expected (126,000 m3 per day versus a projected 134,000 m3/day). In 1990, the light crude production showed a sharper decline from the previous year by about 8% (116,000 m3/day versus 126,000 m3/day). The updated forecast by the ERCB for light crude oil predicts that the total supply will gradually decline to 103,000 m3/day by 1991, with a sharper decline thereafter to 66,000 m3/day by the year 2004.

Today 90% of the world demand for petroleum products is supplied by conventional crude oil while such crudes amount to less than 42% of the world's resources of petroleum in place.

Oil Sands as a Substitute for Declining Conventional Reserves

The decline in conventional reserves, however, could be made up by the orderly development of oil sands and heavy oil resources. The decline in Alberta's conventional crude production may be reversed by the upgrading of bitumen and heavy crude to high quality synthetic crudes (SCO) and marketable transportation fuels. Successful implementation of such a strategy would not only maintain Canada's energy self-sufficiency and improve the overall quality of refinery feedstock, but would also create opportunities to export the high quality SCO and transportation fuels to United States markets.

The technical, proven reserve and cost risks associated with mineable oil sands development are low compared to other new sources of oil within Canada. Mineable oil sands projects are strong, vital projects as they stand. A lengthy development period is not required. Technology is available and demonstrated now, and further development should go ahead now.

MAC believes that production from the mineable oil sands will be needed to meet future domestic needs. Given the current estimates for future oil prices, oil can be produced from the mineable oil sands at a cost competitive with imports. Canada will also benefit from the increased economic activity during a period of time when its labour and manufacturing forces are forecast to be underutilized, from increased tax revenues (at the very least from greater employment), from future improvements in the balance of trade, and from increased security of oil supply.

Joint Development Initiative

The mining and petroleum industries and the federal and provincial governments should do all they can to convince oil importing nations, notably the United States, to recognize the value of investment in oil sands as a long term, secure source of supply. Even though increased oil sands production would contribute only modestly to reduced North American dependency on Middle East supplies, over the medium term it would send a significant signal to the Middle East and other OPEC countries that the United States and Canada are actively pursuing alternative means to ensure a stable, reliable energy supply.

MAC therefore proposes an oil sands development strategy that takes into account the opportunity to employ new plant technology aimed at utilizing Alberta's huge natural gas resources in conjunction with the processing of heavy oil, resulting in a significantly higher

quality product than is currently produced by old refinery technology. Higher quality, in terms of environmentally safer products than exist today, will in effect become a very marketable export as well as meeting the required standards of the future.

Orderly development of the oil sands will result in a number of key benefits for Canada, including:

* Economic growth;

* Significantly greater employment;

* Additional development of spin-off manufacturing;

* Increased export opportunities;

* Environmentally safer fuels than exist today; and

* Security of supply.

Recommendation:

12. **That a joint government/industry working committee be formed to prepare an oil sands development strategy aimed at offsetting the anticipated decline in conventional petroleum reserves in Canada while realizing significant socioeconomic and environmental benefits.**

Chapter 12

FRAMEWORK POLICIES OF GOVERNMENT

Fiscal and Monetary Framework

An important factor determining the scale of mining industry operations in Canada is the framework of government policies. This framework has a bearing on the profitability of operations today which, together with expectations as to the future direction in government policies, influences the extent and location of investment in mineral resource developments projects in Canada.

Some of the prime considerations in framework policies from this standpoint are the following:

- **Canadian dollar exchange rate.**

  A persistently high Canadian dollar, while reducing the cost of machinery and materials purchased abroad, has had the more important effect of making it difficult for Canadian producers to export mineral products. The impact on profits of a one-cent increase in the value of the Canadian dollar may exceed $10 million annually for an individual company and is conservatively estimated at over $200 million for the sector.

- **Interest rates.**

  Interest rates that are significantly higher than in the United States have increased the cost of borrowing and investing in Canada.

- **Labour costs.**

  Wage rate increases in Canada that have significantly outpaced the rise in wage rates in the United States are a major factor in making Canadian industry uncompetitive and in causing companies to move or invest in projects in other countries. Mining companies, which consistently have paid wage rates above the industrial average, are seriously affected.

- **Taxation.**

  Levels of taxation in Canada that exceed tax levels in other countries, notably the United States, create an inducement to expand the scale of operations elsewhere and to restrict it in Canada.

- **Incentives and assistance to industry.**

  Companies make investment decisions on a commercial basis, weighing the prospects for future returns. The availability of tax relief, grants, subsidies, loan guarantees or other forms of monetary assistance from government affects the calculus of future costs, revenues and returns from a mining project. While the reasons for the federal government eliminating many of these advantages are understandable and commendable, the overall effect is likely to be some slowing or change in direction of mining investment in Canada (for example, less grassroots exploration as a result of cancellation of tax and grant inducements to "flow-through" share financing).

- **Infrastructure.**

  Investments in new mineral development projects are considerably influenced by costs of roads, power facilities and other infrastructure if these costs must be borne by the project. In more remote locations, as in many parts of the Yukon and Northwest Territories, the assumption by governments of at least part of these costs of infrastructure can be a deciding factor in what projects go forward and when.

The federal Department of Finance in concert with the Bank of Canada has adopted a mix of policies that will impose a cost/price discipline on Canadian industry, labour and consumers. The federal government is positioned to fight future inflation if the exchange value of the Canadian dollar falls and imports become more costly. The government is imposing restraints on the rate of increase of wage rates in the federal public sector. Through the Goods and Services Tax (GST) the government is developing a possible means of eventual debt reduction. This mix of policies is intended over time to have a favourable overall effect on Canada's competitiveness.

As exporters, the mining industry would have preferred that the federal government had followed a different strategy over the past seven years. In a series of prebudget submissions to the Minister of Finance MAC argued the case for a serious attack on government spending and the deficit as a desirable foundation for fiscal and monetary policy. An early and more vigorous attack on the deficit and national debt would by now have permitted a lower level of taxation and interest rates and probably a lower value for the Canadian dollar.

While it is not possible in this submission to comment on the actions of all provincial and territorial governments, the fiscal policies of the Government of Ontario are a cause for concern. Escalating expenditures, wage costs and deficits run counter to the macroeconomic framework policies which MAC advocates.

Recommendation:

13. **That the federal government develop, and provincial governments support, a mix of fiscal and monetary policies designed to reduce government deficits and indebtedness, to restrain disproportionate increases in Canadian prices, taxes and wage costs relative to Canada's industrial competitors and to enhance the competitiveness of Canadian industry generally.**

Specific Fiscal Policies

While the importance of an appropriate direction for broad fiscal and monetary policies should be stressed, specific tax measures often have an important place in economic development strategies. For example, a specific tax measure may offset the effects of a broad policy direction.

While the GST as a tax on consumption allows tax credits for inputs, the federal government has declined to replace excise taxes by the GST because of the revenue loss involved. Prior to the end of 1990, the mining industry received a 3 cents per litre rebate of excise tax paid on fuel. At that point the rebate was allowed to expire without the excise tax being rolled into the GST. This tax increase raises the cost of fuel and is a major concern for any open pit operation and especially for coal. This and other indirect taxes on production inputs must be absorbed by the Canadian producer. As price takers on world markets, the Canadian mining companies are unable to pass such costs on to the customer.

Recommendation:

14. **That when designing tax measures to encourage competitiveness of the Canadian mining industry, governments take account of the effects of indirect taxes on production inputs. These costs cannot be passed on to customers in world markets.**

Sales of Gold from Canada's Official Reserves

Another form of government action that seems to run counter to a general policy of fostering Canadian competitiveness is the continuing sales of substantial quantities of gold from Canada's official reserves.

In spite of representations from MAC, the federal government continues to sell gold from the official reserves. As a result, gold as a proportion of the reserves has fallen from 80% in 1980 when the gold sales program was instituted to 24% by the end of 1990. Moreover, Canadian government gold sales accounted for over 60 percent of the gold entering the market place from official sources in 1990. Canadian gold producers are concerned that:

- The sales are inconsistent with efforts of the Royal Canadian Mint and the industry to increase the demand for new Canadian mine production of gold; and

- An unfortunate example and precedent are set for other jurisdictions whose sales could seriously depress the world gold market.

Canada is the only producer nation selling its gold reserves in direct competition with its domestic mining industry. The magnitude of the government's gold sales since 1986 are significant when compared with total Canadian output. They are large enough to hinder Canadian efforts to create additional demand for gold, notably through the marketing of the Maple Leaf gold bullion coin and of gold jewellery in France. The federal government has not indicated any intention to stop or slow its gold sales program, maintaining that it needs the revenue.

Recommendation:

15. **That Mines Ministers request the federal Department of Finance to reexamine its policy of selling gold from the official reserves with a view to stopping or limiting the sales in future or adopting some approach which does not jeopardize the demand for new Canadian mine production of gold.**

Infrastructure and the Policy Mix: A Yukon Example

The government's role of providing infrastructure for the mining industry is one of the important elements in a long term development strategy. Infrastructure alone, however, is not enough. The entire policy mix must constitute a logical, workable strategy for development.

At the 1991 Yukon Mines Ministers Conference in Whitehorse on May 23, Mr. W. Doug Eaton on behalf of Archer, Cathro & Associates (1981) Limited, consulting geological engineers of Vancouver, presented a Submission to the Forum on Competitiveness of the Yukon Mining Industry. The brief contained a number of specific suggestions with respect to all the relevant ingredients of a policy mix for development of Yukon mining: roads, power, native land claims, environment regulations and land use permits, development incentives, exploration incentives and advertising. The rationale for the mix of proposed policies was stated as follows:

> "The main focus of any long term strategy must be a system of incentives to promote development of mines rather than to stimulate exploration. If the mining industry perceives that the Yukon is an area where mines can be developed, then exploration will result. However, it may be some time before the significance of any new development incentives is realized and this, coupled with the unusually low level of

exploration activity in recent years, indicates that a short term program of exploration incentives is also required. Implementation of exploration and development strategies must also be accompanied by an aggressive campaign to make potential investors aware of the programs and to overcome some widely held misconceptions about the Yukon."

Among the salient measures proposed are the following:

- The federal and/or territorial governments should fund 100% of costs for major access roads to new mines, as well as 50 to 90% of the cost of secondary roads to mineral properties under development;

- Hydro and/or thermal generation sites should be identified, and generation and transmission cost estimates made available on request to potential mine developers;

- Native land claims should be settled as soon as possible to end perceived uncertainty over selection areas and access to mineral properties;

- Land use regulations adopted by the Yukon pertaining to mineral properties should not exceed regulations elsewhere in Canada;

- A tax-free start-up period should be reintroduced which would amount to a northern allowance on capital costs;

- Incentive grants should be introduced that would be limited to early stage exploration projects and would not include drilling or underground development; and

- An advertising program should be developed on a cooperative basis with input from government, mining companies and service industries.

As a result of the presentation in Whitehorse, the merits of the Archer, Cathro proposal are undoubtedly under consideration by the federal and Yukon governments. The reason for referring to the proposal in this submission is not its content so much as its approach of viewing the regional mineral development problem as a whole and proposing mutually supportive strategies to advance development. Decisions regarding infrastructure will be improved if taken in a broad strategic context.

Recommendation:

16. **That Mines Ministers continue to encourage the presentation of proposals for regional mineral economic development with input from the mining and service industries so that decisions about infrastructure and other elements of a long term plan can be taken in a broad strategic context.**

RECOMMENDATIONS

The Mining industry recommends:

1. That the Mines Ministers commission a joint task force of government and industry to review the industry's environmental performance, to suggest areas for future emphasis, and to increase public awareness of progress in environmental protection in the mineral industry.

2. That the federal Minister of Energy, Mines and Resources work closely with the mining industry and other government departments regarding issues arising in the international or foreign sphere.

3. That Mines Ministers consider establishing a joint government/mining industry task force to review duplication of federal and provincial/territorial regulations and assessment processes in the environment and health field as they impact on the mining industry, with a view to achieving greater complementarity in such regulation.

4. That Mines Ministers reiterate to the Minister of Finance their recommendations regarding deductibility for Income Tax purposes of expenditures into a government-mandated mine reclamation Fund, and should seek an early reply to their inquiries.

5. That Mines Ministers ensure that sound principles underlie legislation and regulations requiring a company to provide financial assurance of mine "reclamation" (including all requirements to reclaim, to decommission and to meet post-closure environmental obligations). These principles include the following:

   * A proposed mining project should not proceed if adequate reclamation costs cannot be provided for satisfactorily.

   * Each owner of a mine (including a joint venture partner) should be responsible for and should pay for any reclamation costs associated with its operations.

   * There should be no industry-wide superfund to finance all mine reclamation costs.

   * If a trust Fund is mandated by a government, the Fund should be managed by the company. An independent third party, such as a trust company, should be acceptable as a trustee of a Fund.

   * An appropriate phasing-in period for new regulations is necessary to allow mining companies to prepare for compliance.

* The approved decommissioning plan should be based on standards current at the time of approval.

* A government should accept the extinguishment of a mine owner's environmental obligations when the objectives of the decommissioning plan have been achieved. There should be a clear procedure and mechanism for having the financial assurance released both as the work is being carried out and upon completion of the work.

* Existing mines should not be called upon to pay the costs of reclaiming mine sites abandoned in the past where there is no recourse to former owners.

* A company with more than one operation should have the option of "pooling" its reclamation costs into a single financial assurance mechanism.

* In addition, in determining what is "reasonable" financial assurance, the government should permit a company, in meeting its obligations, to use an irrevocable letter of credit, performance bond, tax-deductible, government-mandated trust Fund or other forms or combinations of surety acceptable in the circumstances to the particular government.

* Finally, legislation should provide an appropriate mechanism for independent engineering or professional advice, facilitation, mediation and/or arbitration to resolve disputes over the choice of a financial arrangement or the design and operation of a Fund.

(See Discussion Paper, pp. 6-7,9.)

6. That mines ministries undertake an enhanced role in communicating their expertise on a wide range of issues relating to mining to other departments of the federal, provincial and territorial governments. Awareness programs should be developed in mines ministries to promote a wider, more accurate understanding of the importance and role of mining in the economy and society on the part of government decision makers and the general public.

7. That federal, provincial and territorial governments continue their support and provision of data for inclusion in the National Land Use Data Base (NATLUS). Because of MILUC's policy of open distribution of output from NATLUS, contributors to the system are encouraged to provide relevant information sets under conditions that will not impede the broadest possible, appropriate distribution and use of the capability.

8. That Energy, Mines and Resources Canada be closely involved in the process of selection of lands for new parks and should be allocated sufficient funds for the Geological Survey of Canada to undertake a high standard of evaluation of mineral resource potential early in the process of selecting lands for each of the new parks.

9. That Mines Ministers use their good offices to seek a prompt and satisfactory settlement of outstanding native land claims in the North and in British Columbia.

10. That Mines Ministers give a high priority to the continuing work of the IGWG Task Force on Native Participation in Mining and encourage industry involvement.

11. That the mining industry and EMR work cooperatively to enhance the published base of factual information relating recent exploration rates to the goal of sustaining Canada's level of reserves of base metals.

12. That a joint government/industry working committee be formed to prepare an oil sands development strategy aimed at offsetting the anticipated decline in conventional petroleum reserves in Canada while realizing significant socioeconomic and environmental benefits.

13. That the federal government develop, and provincial governments support, a mix of fiscal and monetary policies designed to reduce government deficits and indebtedness, to restrain disproportionate increases in Canadian prices, taxes and wage costs relative to Canada's industrial competitors and to enhance the competitiveness of Canadian industry generally.

14. That when in designing tax measures to encourage competitiveness of the Canadian mining industry, governments take account of the effects of indirect taxes on production inputs. These costs cannot be passed on to customers in world markets.

15. That Mines Ministers request the federal Department of Finance to reexamine its policy of selling gold from the official reserves with a view to stopping or limiting the sales in future or adopting some approach which does not jeopardize the demand for new Canadian mine production of gold.

16. That Mines Ministers continue to encourage the presentation of proposals for regional mineral economic development with input from the mining and service industries so that decisions about infrastructure and other elements of a long term plan can be taken in a broad strategic context.

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L'Association minière du Canada

HALIFAX (Nouvelle-Écosse)
Du 22 au 24 septembre 1991

VEUILLEZ NOTER

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The Mining Association of Canada (MAC)
L'Association minière du Canada (AMC)

GESTION DES RESSOURCES MINIÈRES DU CANADA

Rapport de l'Association minière du Canada

présenté au nom

des associations minières des provinces et des territoires

et des Chambres des mines

à la 48e Conférence annuelle des ministres des Mines

Halifax (Nouvelle-Écosse)

24 septembre 1991

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TABLE DES MATIÈRES

PAGE

INTRODUCTION

RÉSUMÉ

CHAPITRE 1 :

L'IMPORTANCE DE L'INDUSTRIE MINIÈRE POUR LE CANADA

Contribution économique
Source d'unité

CHAPITRE 2 :

OPTIONS MONDIALES POUR L'INDUSTRIE MINIÈRE CANADIENNE

Intensification de la concurrence mondiale
Bilan du Canada en 1991

CHAPITRE 3 :

GESTION STRATÉGIQUE DES QUESTIONS MINIÈRES

Argument fallacieux
L'industrie nucléaire affronte la concurrence mondiale
Réactions stratégiques aux questions liées aux gouvernements

CHAPITRE 4 :

L'INDUSTRIE MINIÈRE ET L'ENVIRONNEMENT

Énoncé de la question
Initiatives de l'industrie minière
Stratégies pour les gouvernements

CHAPITRE 5 : PAGE

RÉGLEMENTATION CROISSANTE : INCERTITUDE ET COÛT DE L'APPLICATION DES RÈGLEMENTS

Énoncé de la question
Initiatives et stratégies de l'industrie minière
Principes de réglementation
Initiatives conjointes gouvernement/industrie

CHAPITRE 6 :

RÉCUPÉRATION DES SITES MINIERS, MISE HORS SERVICE DES MINES ET OBLIGATIONS APRÈS FERMETURE

La question de la déduction fiscale applicable aux dépenses couvertes par un fonds mandaté par un gouvernement pour la récupération des sites miniers
Autres questions relatives à la récupération des sites miniers
Garantie financière pour la récupération des sites miniers

CHAPITRE 7 :

IMAGE DE MARQUE DE L'INDUSTRIE MINIÈRE

Le problème et la réaction de l'industrie minière
Initiatives des ministères des Mines

CHAPITRE 8 :

ACCÈS AUX TERRES ET UTILISATION DE CELLES-CI

Questions relatives à l'utilisation des terres
Terres réservées et le Comité de l'industrie minière sur l'accès au territoire
Évaluation des nouveaux parcs et des ressources minières
Coopération de l'industrie minière avec les Autochtones

CHAPITRE 9 :

RESSOURCES HUMAINES, ÉDUCATION ET FORMATION

Stratégie éducative
L'étude sur les ressources humaines de l'industrie minière
Participation des Autochtones

CHAPITRE 10 : PAGE

QUESTIONS RELATIVES À LA PROTECTION MINIÈRE

État des réserves de métaux communs
levés et cartes géologiques

CHAPITRE 11 :

DÉVELOPPEMENT DES SABLES BITUMINEUX

Base de la ressource et tendances de la production
Les sables bitumineux à la rescousse des réserves classiques déclinantes
Initiative d'un développement conjoint

CHAPITRE 12 :

CADRE DES POLITIQUES GOUVERNEMENTALES

Cadre fiscal et monétaire
Politiques fiscales spécifiques
Vente de l'or provenant des réserves officielles du Canada
L'infrastructure et l'ensemble des politiques : l'exemple du Yukon

RECOMMANDATIONS

I

INTRODUCTION

Le thème de la Conférence 1991 des ministres des mines est «L'importance de l'industrie minière pour le Canada». Dans le présent rapport, on indique que l'industrie minière ne peut apporter une contribution importante au Canada que si, elle-même et les gouvernements, élaborent des stratégies pouvant répondre à la concurrence mondiale qui se fait de plus en plus sentir.

Les sociétés minières doivent développer leurs propres stratégies d'abord pour survivre puis pour prospérer comme concurrentes de classe mondiale. Les gouvernements doivent concevoir des stratégies prenant la forme de lois et de politiques pour renforcer et non pas entraver les facultés de résistance et d'adaptation des sociétés minières.

Le Canada possède de riches ressources minières. L'industrie minière et les gouvernements doivent élaborer les stratégies nécessaires pour transformer les ressources naturelles en avantages pour les Canadiens.

Les dirigeants de l'industrie minière, par l'intermédiaire du conseil d'administration et du comité exécutif de l'Association minière du Canada (AMC), sont à la veille de terminer une évaluation méticuleuse des rôles de l'AMC et des services fournis aux membres. De fait, l'Association minière du Canada élabore actuellement de nouvelles stratégies pour mieux servir ses membres et pour répondre aux changements attendus au cours de la prochaine décennie. Un aspect important de cette évaluation des plans à long terme de l'AMC est une procédure permettant de régler, en étroite collaboration avec les associations minières des provinces et des territoires, les problèmes touchant les politiques d'intérêt public, à mesure qu'ils se posent.

L'AMC souhaite faire connaître aux ministres des Mines, les progrès de certaines de ses initiatives touchant des questions relatives aux gouvernements. Dans le présent rapport, l'industrie minière soumet également aux ministres des Mines ses recommandations relatives aux stratégies gouvernementales nécessaires pour renforcer la capacité concurrentielle de l'industrie minière canadienne et pour maximiser les avantages que les Canadiens peuvent retirer des ressources minières du Canada.

RÉSUMÉ

Chapitre 1

* L'industrie minière contribue de façon significative au produit intérieur brut (PIB) du Canada, à l'emploi, aux investissements et aux exportations. L'exploitation minière est le principal soutien de nombreuses localités et de certaines régions du Canada. Les opérations canadiennes et mondiales de l'industrie minière ont permis d'avoir un ample point de vue, ce qui est une source de compréhension et d'unité pour le Canada.

Chapitre 2

* À cause de la concurrence mondiale qui s'intensifie, les sociétés minières canadiennes doivent être de fortes concurrentes de classe mondiale. Lorsque ces sociétés affectent des capitaux à de nombreux projets ou à de nouvelles installations, elles doivent toujours décider si leur base d'exploitation sera développée au Canada ou dans d'autres pays. Les politiques gouvernementales en vigueur au Canada peuvent avoir une grande influence sur les décisions à prendre.

* Parmi les atouts importants du Canada, en ce qui concerne les activités minières, on peut citer : de grandes réserves connues de minéraux; un personnel compétent et bien instruit; une infrastructure solidement implantée; un niveau de vie élevé; et un régime politique stable. Le faible marché intérieur, l'immense étendue du Canada et les frais élevés de transport qui en résultent sont des désavantages inhérents à ces atouts.

* Les gouvernements doivent concevoir des stratégies et prendre des initiatives pour renforcer les activités commerciales au Canada et pour compenser partiellement les désavantages susmentionnés.

* D'importantes questions gouvernementales ayant trait à l'industrie minière d'aujourd'hui nécessitent l'intervention des gouvernements et de l'industrie minière afin que soient élaborées conjointement des stratégies pour faciliter la compétitivité de l'industrie minière et pour s'assurer que le Canada sera en mesure d'exploiter ses riches ressources minières de sorte que la population canadienne puisse en profiter au maximum.

Chapitre 3

* Les sociétés minières canadiennes et les associations connexes répondent à la concurrence mondiale en élaborant des stratégies leur permettant de relever le défi des bouleversements économiques et des marchés mondialisés.

* Le présent rapport examine en détail les stratégies et les initiatives que les gouvernements et les sociétés minières, parfois conjointement, devraient considérer en ce qui concerne les importantes questions signalées par les cadres supérieurs de l'industrie minière.

Chapitre 4

* L'industrie minière a adopté le concept du développement soutenable et elle reconnaît qu'il faut améliorer les activités environnementales en cas de déficit. Cependant, l'industrie minière est préoccupée au sujet des règlements n'ayant aucune base scientifique, irréalistes du point de vue technique ou inutilement complexes et coûteux.

* L'industrie minière est également préoccupée par le fait que le public et certains services gouvernementaux ne sont pas conscients des activités et des réalisations de l'industrie minière dans l'environnement. Des règlements inutilement rigoureux peuvent résulter d'une mauvaise image de marque de la part du public. L'amélioration de l'image de marque de l'industrie minière nécessite un progrès constant dans la gestion de l'environnement. L'AMC élabore actuellement des stratégies à la fois pour perfectionner les opérations et pour améliorer l'image de marque de l'industrie minière auprès du public et des groupes intéressés.

* L'industrie minière approuve les consultations faites par les gouvernements, dans le cas des dépositaires d'enjeux concernés, en fixant les objectifs et les normes s'appliquant à la protection de l'environnement.

* Des programmes conjoints, faisant appel à la compétence de l'industrie minière, peuvent être mis en oeuvre en cas de désastre environnemental.

* Les gouvernements et l'industrie minière devraient élaborer conjointement des stratégies pour améliorer le comportement environnemental de cette industrie et pour rendre le public davantage conscient des réalisations minières.

Chapitre 5

* Les règlements gouvernementaux sont de plus en plus détaillés. Leur contenu, leur forme et leur impact alourdissent beaucoup le fardeau financier de l'industrie minière. L'accroissement des règlements et le chevauchement des responsabilités laissent entrevoir des coûts élevés pour les futurs travaux et une incertitude quant à la possibilité d'exploiter des gisements de minéraux de grande valeur. En modifiant les normes et les critères s'appliquant à l'environnement et en apportant aux règlements des amendements apparemment hostiles, on peut aggraver les problèmes.

* Parmi les questions provenant de sources internationales ou étrangères se trouvent des propositions relatives à la régularisation de matières premières spécifiques sur la base de leur toxicité intrinsèque plutôt que sur la base du risque encouru lorsqu'on les emploie.

* Toutes ces questions relatives aux règlements ont tendance à accroître les risques, les incertitudes et les coûts d'application des normes dans l'industrie minière. La réaction de cette industrie consiste à essayer de susciter la compréhension du public à l'égard de l'impact sur les projets et les investissements des mesures gouvernementales et à rechercher un environnement stable et réalisable conformément aux règlements.

* L'AMC exhorte les gouvernements et le public à accepter certains critères sous-tendant les règlements relatifs à l'environnement, à savoir : consultation des gouvernements avec les dépositaires d'enjeux; démonstration du besoin de règlements; approche vers le fardeau le moins lourd; approbation de normes et de critères assortis comme il faut avec les moyens de l'industrie minière; égalité des responsabilités à l'égard des dommages environnementaux; aucune duplication fédérale-provinciale en ce qui concerne les règlements et les activités relatives à l'évaluation des projets; et précaution additionnelle lors de l'adoption de mesures ou de conventions internationales ou étrangères.

* L'AMC propose que des dispositions soient prises conjointement par les gouvernements et l'industrie minière au sujet des initiatives internationales et de la duplication possible des règlements fédéraux et provinciaux dans les domaines de l'environnement et de la santé.

Chapitre 6

* Lors des précédentes conférences annuelles des ministres des Mines, on a présenté des rapports concernant divers aspects de la récupération des sites, y compris le traitement fiscal des frais de récupération. En dépit des demandes répétées de l'AMC et des gouvernements provinciaux, le ministère des Finances du Canada retarde la décision relative à la possibilité de déduire, pour fins de l'impôt sur le revenu, les contributions faites par les sociétés minières au Fonds de récupération des sites mandaté par le gouvernement. C'est une question importante pour l'industrie minière qui exhorte les ministres des Mines à s'efforcer d'obtenir prochainement une réponse favorable du ministre des Finances du Canada.

* L'AMC a envisagé des objectifs et des stratégies que l'industrie minière pourrait adopter en ce qui concerne d'autres aspects de la récupération des sites, y compris : les normes à atteindre lors de la fermeture d'une mine; le développement d'une technologie perfectionnée pour la récupération des sites; et les mesures à prendre lorsque des mines sont en veilleuse ou abandonnées.

* En 1991, l'industrie minière a publié le rapport (ci-joint) intitulé : Garantie financière pour la récupération des mines, leur mise hors service et les obligations postérieures à leur fermeture. Ce rapport expose la position nationale de l'industrie minière. Il décrit ce qui doit constituer une «garantie financière raisonnable» et il examine des questions connexes. Des principes de base sont proposés pour établir des lois et des règlements permettant d'obtenir une garantie financière pour la récupération des sites miniers.

Chapitre 7

* De récents sondages ont montré que le public juge négativement l'industrie minière dans les domaines de l'environnement, de la santé et de la sécurité. L'AMC reconnaît que sans le soutien du public il est fort probable que les politiques gouvernementales seront préjudiciables à l'industrie minière.

* L'industrie minière a adopté un plan de communications dont les objectifs et les stratégies concernent quatre domaines importants : lois et règlements défavorables; perceptions négatives ou erronées; relations donnant lieu à des débats contradictoires; et comportement de l'industrie minière dans le passé. Les stratégies comprennent une «vérification des communications».

* L'industrie minière recommande aux ministres des Mines de jouer un rôle de premier plan : (a) en communiquant leur compétence aux autres ministères et (b) en élaborant des programmes destinés aux décideurs gouvernementaux et au grand public.

Chapitre 8

* L'accès aux terres et leur emploi dans des conditions raisonnables pour la prospection et l'exploitation minières peuvent être entravés par des restrictions de divers types imposées par les gouvernements. Étant donné qu'aucune région du Canada ne peut être exclue sous prétexte qu'elle n'a pas de potentiel minier, la prospection minière doit avoir lieu dans de vastes terrains. Le rétrécissement de la prospection à cause de terrains interdits ne peut que limiter les occasions d'exploiter les ressources minières du Canada.

* L'effet cumulatif des terrains interdits à la prospection et à l'exploitation minières à la fin des années 1980, résultant de préoccupations accrues au sujet de l'environnement et des mesures prises pour développer les parcs nationaux et d'autres terres protégées, a incité l'AMC, l'Association des prospecteurs et des promoteurs du Canada et les associations minières des provinces et des territoires à former, en 1989, le Comité de l'utilisation des terrains par l'industrie minière (CUTIM).

* Le CUTIM a réalisé un système informatique de données géographiques pour représenter l'étendue et la nature des restrictions bloquant l'accès aux terres pour fins de prospection et d'exploitation minières. La base de données NATLUS concernant l'utilisation des terres nationales a été développée par un consultant de CUTIM, à savoir Earth & Ocean Research Ltd. de Dartmouth (Nouvelle-Écosse) de concert avec le Secteur des politiques minières d'Énergie, Mines et Ressources Canada (EMR), Environnement Canada et les ministères des Mines des provinces et des territoires. Le système NATLUS fournira des données supplémentaires en ce qui concerne les restrictions interdisant l'utilisation de certaines terres dans l'ensemble du Canada et il permettra de faire des analyses approfondies quant aux effets de ces restrictions sur l'exploitation minière. Par ailleurs, NATLUS sera très utile pour les gouvernements et les écologistes voulant planifier l'utilisation des terres.

* La création de 18 nouveaux parcs (dont 10 dans le Nord) vers l'an 2000, comme annoncé dans le Plan vert, aura pour effet d'ajouter des terres à celles des parcs existants où la prospection et l'exploitation minières sont déjà interdites. Ainsi, environ 4,6 % des terres du Canada, au lieu de 3 %, seront réservées pour des parcs nationaux, ce qui représente une superficie trois fois plus grande que la surface totale des trois provinces maritimes.

* Le Comité de l'utilisation des terrains par l'industrie minière est préoccupé par la hâte que l'on semble avoir d'appliquer les dispositions du Plan vert qui visent à réserver 12 % de la totalité des terres du Canada pour les parcs nationaux et les zones protégées. L'industrie minière souhaite que EMR joue un rôle important dans la sélection des terres destinées aux nouveaux parcs et que ce ministère obtienne les moyens voulus pour effectuer l'évaluation du potentiel des ressources minières, conformément à une haute norme et le plus tôt possible.

* Les revendications non réglées des Autochtones en ce qui concerne les terres empêchent la prospection et l'exploitation minières et elles engendrent une incertitude quant à l'utilisation éventuelle de vastes étendues de terre. C'est pourquoi l'industrie minière sollicite le règlement des revendications territoriales des Autochtones, le plus tôt possible, dans le Nord et en Colombie-Britannique.

* Pour assurer une transition sans heurt et mutuellement satisfaisante vers un nouveau régime comprenant le droit de propriété des terres et des règlements relatifs à leur utilisation au Nunavut dans l'Est de l'Arctique, la Fédération Tungavik de Nunavut et l'industrie minière ont établi en 1990 un groupe de travail mixte comprenant des représentants des Inuit et de l'industrie minière. Par ailleurs, l'industrie minière a proposé un arrangement analogue au Conseil des Amérindiens du Yukon.

Chapitre 9

* La compétitivité de l'industrie minière doit dépendre d'un personnel instruit, compétent et pouvant s'adapter à diverses circonstances. Pour atteindre cet objectif, les gouvernements, les syndicats et les représentants de l'industrie minière doivent prendre des initiatives, séparément ou conjointement.

* L'AMC, les United Steelworkers of America et l'Institut canadien des mines, de la métallurgie et du pétrole ont demandé que Emploi et Immigration Canada entreprenne une étude sur les ressources humaines dans l'exploitation minière. Cette étude, annoncée en juin 1991, doit être effectuée selon une approche pragmatique et collaborationniste afin d'élaborer la stratégie dont l'industrie minière a besoin pour relever le défi des ressources humaines.

* L'AMC reconnaît l'importance du Comité intergouvernemental sur l'industrie minière pour le groupe de travail examinant la participation des Autochtones à l'exploitation minière et elle recommande que les ministres des Mines continuent de donner une haute priorité à ce travail.

Chapitre 10

* Des informations et des analyses additionnelles sont nécessaires pour établir la base des futures stratégies du gouvernement fédéral et des gouvernements provinciaux, en ce qui concerne la prospection des métaux communs au Canada. L'Association des prospecteurs et des promoteurs et l'Association minière du Canada examinent actuellement les possibilités d'une étude permettant de répondre à la question suivante : Est-ce que les prospections faites couramment au Canada seront suffisantes pour maintenir la contribution du Canada aux réserves mondiales de métaux communs, lesquelles doivent être accrues dans l'avenir. Les deux associations susmentionnées cherchent à obtenir la coopération de EMR pour cette étude.

* L'industrie minière reconnaît l'importance des études et des cartes géologiques de haute qualité réalisées par la Commission géologique du Canada et des programmes complémentaires mis en oeuvre par les gouvernements des provinces et des territoires. Dans certaines régions, le niveau de ces activités devrait être relevé.

Chapitre 11

* Les réserves massives de sables bitumineux qui se trouvent en Alberta peuvent constituer une base pour maintenir ou accroître la production de pétrole brut alors que les réserves classiques de pétrole sont en baisse. La production de pétrole brut à partir des sables bitumineux, évaluée en 1990 à plus de 2 milliards de $, forme déjà 13,8 % de la production totale de pétrole brut et de produits équivalents au Canada.

* Le pétrole extrait des sables bitumineux sera nécessaire pour satisfaire les futurs besoins nationaux et, compte tenu des prévisions courantes concernant le prix du pétrole, le pétrole des sables pourra concurrencer les produits importés.

* L'exploitation ordonnée des sables bitumineux avantagera le Canada dans les domaines suivants : croissance économique; emploi; fabrications induites; exportations accrues; carburants plus sécuritaires pour l'environnement; et approvisionnements fiables.

* L'industrie minière suggère qu'un comité mixte comprenant des fonctionnaires et des industriels prépare une stratégie pour l'exploitation des sables bitumineux.

Chapitre 12

* La structure monétaire et fiscale établie par les gouvernements influe sur la rentabilité des opérations minières canadiennes et sur l'orientation des investissements à long terme, soit au Canada, soit à l'étranger. Les principaux facteurs politiques qui retiennent l'attention de l'industrie minière sont les suivants : le taux de change du dollar canadien; les taux d'intérêt; le coût de la main-d'oeuvre; les taxes; les motivations et l'aide fournie à l'industrie; et l'infrastructure.

* Le ministère des Finances et la Banque du Canada imposent une discipline coût/prix à l'industrie, à la main-d'oeuvre et aux consommateurs. À la longue, cette politique devrait accroître la compétitivité de l'industrie canadienne.

* L'industrie minière préconise un ensemble de politiques monétaires et fiscales ayant pour but de réduire les déficits gouvernementaux ainsi que les dettes et les créances, de restreindre les augmentations disproportionnées des prix, des taxes et des salaires par rapport aux concurrents industriels du Canada et d'accroître la compétitivité canadienne.

* Certaines mesures fiscales peuvent contrebalancer des politiques générales visant à stimuler la compétitivité. Un exemple est la suppression d'un rabais de 3 cents de taxe d'accise précédemment accordé par litre de carburant. Étant donné que la taxe d'accise n'a pas été incluse dans la taxe sur les produits et services (TPS) la taxe majorée doit être payée par les utilisateurs du carburant, ce qui préoccupe beaucoup les exploitants des fosses à ciel ouvert (particulièrement les fosses de charbon) quant il est impossible de faire payer de tels coûts additionnels à des clients résidant à l'étranger.

* Le fait de continuer à vendre de grandes quantités d'or provenant des réserves officielles du Canada est incompatible avec les efforts de la Monnaie royale canadienne et de l'industrie minière pour accroître la demande de production d'or dans de nouvelles mines. De plus, les ventes de l'or du Canada constituent un fâcheux exemple pour d'autres autorités pouvant vendre des quantités d'or suffisantes pour déprimer gravement les marchés mondiaux.

* Un consultant a recommandé des mesures efficaces pour améliorer la compétitivité de l'industrie minière du Yukon. Voilà un exemple d'une approche utile pour développer des stratégies permettant de faire progresser le développement économique. Il est souhaitable que les décisions relatives à l'infrastructure et aux autres éléments d'un plan de développement à long terme soient prises dans un vaste contexte stratégique.

Chapitre 1

L'IMPORTANCE DE L'INDUSTRIE MINIÈRE POUR LE CANADA

Contribution économique

L'industrie minière est une bâtisseuse de pays. Sa contribution au Canada résulte en partie de son ampleur et en partie de la répartition géographique de ses activités à travers le pays.

Les ressources minières du Canada se trouvent sous une forme ou une autre dans chaque province et dans les territoires. Ces ressources servent de matières premières dans les fonderies, les affineries, les usines métallurgiques et les usines de traitement des matériaux industriels. Ces opérations ont lieu dans différentes agglomérations situées dans de nombreuses régions du pays.

Les producteurs de minerais non-ferreux, de concentrés et de métaux forment la plus grande partie des membres de l'AMC. Ces producteurs oeuvrent dans les quatre stades du traitement des minéraux : 1 - exploitation minière et concentration; 2 - extraction par fusion et affinage; 3 - semi-fabrication des minéraux et des métaux; 4 - fabrication des métaux. En 1990, les quatre stades de l'activité minière représentaient 4 % (23 milliards de $) du produit intérieur brut (PIB) du Canada, 3 % (387 000) de l'emploi, 6 % (10 milliards de $) du capital investi et du total des dépenses pour les réparations et 18 % (25 milliards de $) des exportations canadiennes. (cf «The Mineral Industry in the Canadian Economy» par A. Simonowski et J. Currie, InfoMAC, juillet 1991, pp. 2-3).

Environ 115 agglomérations ayant une population proche du million dépendent directement ou indirectement de l'exploitation minière. Dans de nombreux cas cette exploitation est le pivot de l'économie locale, particulièrement dans les régions rurales éloignées des grands centres. Dans ces régions, les activités minières sont les seuls avantages naturels.

Dans certaines régions, l'exploitation minière est le soutien principal de l'économie. Par exemple, depuis le milieu jusqu'à la fin des années 1980, l'exploitation minière a représenté, certaines années, 43 % du PIB des deux territoires nordiques du Canada.

L'exploitation minière a été la force motrice ayant ouvert de nombreuses régions du Canada pour l'habitation et l'industrialisation. Un industriel a décrit le programme minier comme étant le «meilleur programme de développement régional au Canada». Quant au futur, on peut dire qu'il existe encore beaucoup de terrains au Canada ayant des réserves minières connues ou inconnues qu'il faudra prospecter davantage pour déterminer leur potentiel commercial. À titre d'exemple, il est nécessaire de faire d'autres levés et des cartes géologiques dans des réserves amérindiennes afin de déterminer les emplacements prometteurs pour la prospection minière.

Source d'unité

De nombreuses sociétés membres de l'AMC, des associations minières des provinces et des territoires ainsi que des chambres des mines oeuvrent dans plusieurs juridictions du Canada et à l'étranger. Les sociétés minières canadiennes sont habituées à travailler dans diverses situations géologiques, climatiques et politiques et à employer des personnes ayant diverses cultures et parlant différentes langues.

Les dirigeants et les gestionnaires de l'industrie minière ayant acquis cette vaste expérience se trouvent avantagés lorsqu'ils doivent diriger des travaux au Canada, leur port d'attache. L'industrie minière a sollicité le règlement rapide des revendications territoriales des Autochtones dans des conditions satisfaisantes pour eux. L'industrie minière a établi avec la Fédération Tungavik du Nunavut un comité mixte comprenant des Inuit et des représentants de l'industrie minière, ce comité ayant pour but d'appliquer, de façon satisfaisante pour les Inuit et les industriels, les nouveaux régimes (propriété et statut) découlant du règlement des revendications territoriales. L'industrie minière souhaite établir des relations directes semblables avec les Amérindiens et les Métis. L'AMC recommande la formation et l'emploi d'Autochtones et les sociétés minières appliquent cette recommandation.

L'industrie minière canadienne a soutenu l'accord de libre-échange conclu entre le Canada et les États-Unis ainsi que la série des négociations multilatérales du GATT tenues en Uruguay, afin d'ouvrir les barrières douanières et autres qui entravent le commerce international. L'industrie minière souhaite l'élargissement de son marché et elle aimerait être encouragée à traiter davantage les minéraux au Canada. Par ailleurs, l'industrie minière est d'avis que les barrières commerciales interprovinciales devraient être supprimées au Canada. Fondamentalement, le maintien de l'union économique canadienne est une condition indispensable pour avoir une industrie minière canadienne forte et prospère.

En effectuant leurs opérations dans toutes les régions du pays, les sociétés minières canadiennes demandent à leurs cadres et à leurs employés de traverser un grand nombre de barrières régionales qui divisent souvent les Canadiens. La connaissance des différentes régions qui composent le Canada facilite l'appréciation de l'ensemble. Comme beaucoup d'autres industries ayant des opérations éloignées de leur base locale, l'industrie minière est au summum de sa prospérité dans un environnement politique stable. Tout en restant ouverte aux changements politiques nécessaires, l'industrie minière est résolument en faveur d'un Canada uni.

Chapitre 2

OPTIONS MONDIALES POUR L'INDUSTRIE MINIÈRE CANADIENNE

Intensification de la concurrence mondiale

C'est un truisme de dire que l'économie mondiale devient de plus en plus intégrée et interdépendante. Les pays ne peuvent plus protéger leurs entreprises et leurs populations contre la concurrence. La rationalisation mondiale a lieu tout autour de nous, dans les transports (p. ex. voyages aériens), dans les services (p. ex. opérations bancaires) et dans les fabrications manufacturières (p. ex. automobiles).

Les mêmes tendances sont perçues dans les industries exploitant les ressources naturelles. Bien que le Canada ait d'importantes ressources minières et une forte industrie pour les exploiter, leur future contribution au bien-être des Canadiens ne sera pas assurée à moins que l'industrie minière et les gouvernements adoptent des stratégies pour exploiter les ressources compte tenu de la concurrence mondiale.

Le professeur Peter R. Richardson enseignant à l'École de commerce de l'Université Queen a décrit le défi que l'industrie minière doit relever dans le monde. Les producteurs de minerais de l'Amérique du Nord trouvent qu'il est de plus en plus difficile d'avoir une exploitation constamment rentable. Dans le passé, les cycles commerciaux donnaient lieu à des surcapacités et à des marges bénéficiaires déprimées mais les affaires de l'industrie minière reprenaient lorsque les prix augmentaient. Cependant, au cours des dix dernières années, selon M. Richardson, même les producteurs ayant des masses de minerai et des installations métallurgiques de «classe mondiale» n'ont obtenu qu'un rendement marginal même lorsque les prix étaient élevés. M. Richardson a fait un parallèle entre l'industrie minière et les fabricants nord-américains ayant perdu du terrain face à la concurrence de l'Europe et de l'Extrême-Orient. Toujours selon M. Richardson, à cause de l'accroissement de la concurrence mondiale, les marges bénéficiaires de l'industrie minière nord-américaine sont insuffisantes pour assurer un réinvestissement convenable dans la prospection et dans les équipements modernes de production. (Peter R. Richardson, «World Class Mineral Operations», CRS Perspectives, june 1991, p. 2)

Dans le passage suivant, M. Richardson décrit la situation actuelle et donne une solution possible :

> «Les sociétés minières nord-américaines doivent faire face à une concurrence mondiale de plus en plus acharnée, à des marges bénéficiaires en baisse, à une compétition serrée à l'intérieur de chaque pays pour obtenir des employés qualifiés et à des règlements relatifs à l'environnement plus rigoureux que ceux imposés aux concurrents étrangers. Pour survivre et se développer, les sociétés minières nord-américaines doivent adopter des stratégies efficaces. Comme dans le cas des industries manufacturières, il est possible d'effectuer des opérations à l'étranger, dans des pays comme le Chili, le Botswana et le Brésil où les règles s'appliquant à l'environnement et aux entreprises sont très attirantes. Cependant, l'instabilité politique, l'agitation

sociale et les autres difficultés que l'on peut avoir dans ces pays sont de nature à neutraliser les avantages susmentionnés.» (p. 2)

Par suite de l'intensification de la concurrence mondiale, il est essentiel que les sociétés minières canadiennes se développent pour devenir des concurrentes de classe mondiale si elles veulent survivre et prospérer.

Dans l'environnement du marché mondial, les décisions d'une entreprise à l'égard des investissements majeurs doivent être prises compte tenu de ses options mondiales. Cette entreprise doit décider où la prospection doit avoir lieu, quels minerais sont prometteurs, quelles opérations existantes doivent prendre fin, être maintenues ou développées et où construire ou agrandir les fonderies, les affineries et les usines de fabrication. Ces décisions peuvent avoir des effets considérables sur le bien-être des Canadiens.

Les décisions doivent être prises, au moins partiellement, compte tenu des avantages et des désavantages du Canada par rapport à d'autres pays ou compte tenu du bilan d'une juridiction du Canada par rapport à celui d'une autre. La stabilité politique, les conditions sociales, les politiques macroéconomiques et certaines politiques spécifiques des gouvernements seront également prises en considération lors des prises de décision.

Bien que les gisements miniers soient «où on les trouve», les sommes que les sociétés minières canadiennes destinent à la prospection peuvent voyager. C'est ainsi qu'une société peut avoir à décider si elle investira au Canada, aux États-Unis, au Zaïre ou au Chili pour faire de la prospection. Les sociétés canadiennes et leurs dirigeants préféreraient travailler au Canada. Le «magasinage outre-frontière» n'est pas de leur goût. Cependant, le mordant de la concurrence est inexorable et les dirigeants doivent rendre des comptes à leurs actionnaires qui veulent le meilleur rendement possible. C'est pourquoi les politiques de nos divers gouvernements ont une grande influence sur les décisions relatives aux investissements et elles sont particulièrement importantes au stade actuel du développement de l'industrie minière canadienne. De fait, les politiques gouvernementales peuvent avoir un effet considérable sur la future situation de cette industrie.

Bilan du Canada en 1991

En ce qui concerne l'industrie minière, quels sont l'actif et le passif du Canada pouvant influencer les décisions prises par cette industrie pour ses investissements à long terme?

Voici l'essentiel du bilan :

Actif

* grandes réserves minières connues et bonnes possibilités d'en trouver d'autres quoique, probablement, à un coût majoré;

* main-d'oeuvre instruite et compétente;

* infrastructure généralement forte destinée au soutien des opérations commerciales, y compris une importante base de données géologiques (levés et cartes), routes passant dans des régions inhabitées et nombreux services gouvernementaux.

* au Canada, le niveau de vie est supérieur à celui de nombreux pays industrialisés, ce qui donne un marché où une vaste gamme d'articles et de services peuvent s'écouler;

* régime politique démocratique qui s'est avéré stable et qui s'est adapté aux changements sociaux au fil des ans;

* niveau de compétence généralement élevé et honnêteté au sein des services gouvernementaux dans toutes les juridictions.

Passif

* petit marché intérieur comprenant moins de 27 millions d'habitants dont 16 millions résident au Québec et en Ontario, au centre du pays;

* conditions difficiles, comprenant de longues distances et un climat rigoureux;

* longues routes et coûts élevés de transport pour une population relativement petite.

Dans une large mesure, les gouvernements peuvent compenser certains des désavantages nuisant aux opérations effectuées au Canada plutôt que de laisser tout le fardeau de la géographie et du climat sur les épaules des producteurs qui sont obligés de rivaliser avec des étrangers sur le marché mondial. En ce qui concerne les Territoires du Nord-Ouest, où le potentiel minier est généralement élevé, il est à noter que les conditions y sont très rudes et que l'infrastructure minière y est très précaire. Dans le passé, les gouvernements ont pris d'importantes initiatives en ce qui concerne les levés géologiques, les réseaux de transport et les aides à la navigation, les organismes nationaux de recherche et les services à l'étranger du commissariat au commerce.

Tous ces exemples d'actif et de passif et d'initiatives gouvernementales tendant à soutenir et à renforcer les activités commerciales au Canada ne donnent pourtant pas un tableau complet de la situation actuelle. Néanmoins, ces exemples montrent le rôle important que les gouvernements peuvent jouer pour rendre le Canada viable et prospère.

Actuellement, tandis que l'industrie minière réagit à l'intensification de la concurrence mondiale, les entreprises prennent conscience de certains handicaps imposés par les gouvernements. Ces handicaps peuvent entraîner les investissements à long terme hors du Canada. Un certain nombre d'entre eux se trouvent dans les règlements qui subissent des changements rapides, il y a des incertitudes quant aux futures dispositions qui régiront la

prospection et l'exploitation des gisements miniers et il y a la responsabilité de la récupération des sites ou les longues périodes de temps pour parvenir aux sites importants. Quelquefois, il y a l'impact cumulatif des exigences réglementaires, des incertitudes, des longs déplacements et des coûts, ce qui peut influer sur les décisions relatives aux investissements.

Nombreux sont les problèmes majeurs auxquels l'industrie minière canadienne doit faire face. Il s'agit de désavantages potentiels que les gouvernements pourraient minimiser ou compenser au moyen de stratégies efficaces et de mesures judicieuses. Une grande partie de la suite du présent rapport est consacrée à l'étude des stratégies que les gouvernements (ou les gouvernements conjointement avec l'industrie minière) pourront adopter afin de supprimer les désavantages appréhendés et accroître la capacité du Canada à exploiter son potentiel minier pour procurer un maximum d'avantages à sa population.

Chapitre 3

GESTION STRATÉGIQUE DES QUESTIONS MINIÈRES

Argument fallacieux

Un argument fallacieux que l'on accepte souvent sans sourciller dans les milieux publics et gouvernementaux est que l'industrie minière en particulier ne contribue plus de façon substantielle à la prospérité économique du Canada et que la voie de l'avenir passe par la haute technologie et les industries de service.

Les preuves données pour cette opinion sont sommaires et basées en grande partie sur des idées préconçues. L'intensification de la concurrence mondiale ne va pas donner lieu à l'effondrement de l'industrie minière canadienne qui va trouver le moyen d'améliorer sa compétitivité. Pour répondre aux préoccupations environnementales du public, l'industrie minière a pris des mesures avant-gardistes primées dans le domaine de la technologie et de la récupération environnementale. Seules les personnes mal informées, prétendant à tort que l'industrie minière détériore l'environnement, demandent l'arrêt de l'exploitation minière. Les questions qui se posent au sujet de la capacité des réserves canadiennes de métaux communs ou au sujet du taux de réussite possible de la recherche de réserves commerciales peuvent être résolues par l'analyse plutôt que par des conjectures. L'industrie minière canadienne pourra survivre si les gouvernements sont conscients des périls qui la guettent, comme par exemple, le rétrécissement des zones disponibles pour la prospection et l'exploitation minières ou l'imposition de règlements pénibles et coûteux pour l'industrie minière.

De plus, des faits s'opposent à la notion que l'industrie minière, parmi toutes les industries canadiennes, ne peut pas faire face à la concurrence. La vérité est toute autre. Durant les années 1980, l'industrie minière a donné le ton pour l'amélioration de la productivité canadienne. D'ailleurs, l'industrie minière n'est pas la seule à faire face à la concurrence mondiale. Au Canada, les établissements financiers, les constructeurs d'avions, les producteurs d'équipements électroniques et même les marchands des centres commerciaux doivent faire face de nos jours à une forte concurrence étrangère. La haute technologie et les industries de service ne sont pas à l'abri d'une concurrence acharnée. De fait, les Canadiens qui dépendent trop de ces industries n'ont aucune garantie de vie facile.

L'industrie minière canadienne est décidée à ne pas lâcher prise. En élaborant maintenant des stratégies de survie et de croissance, les sociétés minières se préparent à relever les défis de l'avenir. En examinant et en révisant leurs missions, leurs rôles et leurs stratégies, les associations minières s'efforcent de servir efficacement leur industrie, particulièrement en ce qui concerne ses relations avec les gouvernements et le public.

L'industrie minière affronte la concurrence mondiale

Dans son article sur les opérations minières de classe mondiale, le professeur Richardson donne des détails au sujet des stratégies que les producteurs nord-américains doivent élaborer pour réussir dans le commerce mondial des matériaux au cours des années à venir.

M. Richardson est d'avis que l'exploitation minière en Amérique du Nord est semblable à beaucoup d'égards aux fabrications manufacturières. En effet, ces deux types d'industrie doivent rivaliser avec les producteurs du Tiers-Monde et l'industrie minière peut adapter la meilleure expérience acquise dans les usines manufacturières nord-américaines pour améliorer ses opérations et ses recettes. M. Richardson a décrit de façon assez détaillée ce que les sociétés minières devraient faire pour appliquer la philosophie gestionnaire de classe mondiale à leurs opérations et à leurs finances. L'objectif, pour l'industrie minière nord-américaine, est de perfectionner sa performance afin de garder sa position parmi les chefs de file mondiaux. Essentiellement, voici l'avis de M. Richardson :

> «En suivant l'exemple de leurs homologues producteurs de produits manufacturés, les dirigeants de l'industrie minière doivent réviser complètement les paramètres et la structure des opérations minières, tout au long de la chaîne des valeurs intégrées, pour engendrer des améliorations, de l'ordre de grandeur voulu, en ce qui concerne la productivité, le coût, la qualité et la durée des cycles de production.» (page 11)

M. Richardson recommande aux sociétés minières de prendre des décisions stratégiques à l'égard des opérations et des finances afin de positionner avantageusement l'industrie minière pour le futur. De plus en plus, les sociétés membres de l'AMC reconnaissent que les décisions et la planification stratégique à long terme sont impérativement nécessaires pour l'adaptation aux conditions changeantes.

Réactions stratégiques aux questions liées aux gouvernements

Bien que les sociétés minières puissent adopter des stratégies bien à elles pour améliorer leur performance, elles peuvent décider de procéder conjointement ou par l'intermédiaire d'associations minières pour traiter les questions extérieures, notablement celles relatives aux politiques et aux initiatives gouvernementales.

Sous l'influence des sociétés minières, les associations minières également développent des approches stratégiques de gestion pour régler les importantes questions liées aux gouvernements, car ces questions sont cruciales pour le futur de l'industrie minière. Tous les efforts déployés pour améliorer la performance des sociétés minières peuvent être inutiles si les initiatives gouvernementales entravent ou ne soutiennent pas les mesures prises par l'industrie minière pour améliorer sa compétitivité.

À titre d'exemple, il est à noter que les cadres supérieurs spécialisés dans l'exploitation minière qui font partie du conseil d'administration de l'AMC ont procédé en 1991 à la révision de la planification stratégique de l'AMC, afin d'améliorer les services fournis aux membres et la manière de régler les questions urgentes et celles à long terme. En ayant

recours aux conseils des consultants Ernst & Young l'AMC a révisé l'énoncé de sa mission, a redéfini ses rôles et a adopté une procédure pour gérer les questions afin de pouvoir les régler en collaborant étroitement avec les associations minières des provinces et des territoires.

Un certain nombre d'autres associations ont également pris des mesures formelles pour améliorer leurs stratégies à long terme, y compris : the Mining Association of British Columbia, the Ontario Mining Association, l'Association minière du Québec Inc. et the B.C. and Yukon Chamber of Mines.

Lors du stade initial de leur révision de la planification stratégique, les membres du Comité exécutif de l'AMC ont retenu un certain nombre de questions en évaluant leur importance. On commentera dans le présent rapport les sept questions liées aux gouvernements. Ces questions ont été déterminées compte tenu de la liste des sujets les plus importantes et compte tenu des discussions ayant eu lieu ultérieurement entre les administrateurs de l'AMC et les dirigeants des sociétés-membres. Voici les sept questions qui concernent les ministres des Mines :

* performance environnementale de l'industrie minière;

* réglementation croissante de l'exploitation minière : incertitude et fardeau de l'application des règlements;

* récupération des mines, leur mise hors service et obligations après leur fermeture;

* image de marque défavorable auprès du public;

* accès aux terrains et utilisation des sites pour la prospection et l'exploitation minières;

* nécessité d'atteindre des niveaux appropriés en matière d'instruction, de formation et de compétence et nécessité d'obtenir des ressources humaines satisfaisantes;

* gestion gouvernementale de l'économie, climat favorable aux investissements et infrastructure minière;

Chacune de ces questions est commentée dans un chapitre particulier, sous deux aspects : (1) initiatives et stratégies de l'industrie minière et (2) options pour les stratégies gouvernementales. Lorsque des initiatives conjointes industrie/gouvernement existent ou semblent possibles, ce type d'approche à long terme pour régler les questions sera également pris en considération.

Chapitre 4

L'INDUSTRIE MINIÈRE ET L'ENVIRONNEMENT

Énoncé de la question

La performance environnementale de l'industrie minière dépend de la technologie employée, des normes établies par les gouvernements, des priorités des sociétés et des investissements. La réglementation gouvernementale des aspects environnementaux des opérations minières reflète un amalgame de preuves scientifiques, d'opinions publiques, de normes plus ou moins complexes pour protéger l'environnement et de considérations philosophiques et prioritaires provenant du gouvernement concerné.

Pour répondre aux espérances du public en matière de protection de l'environnement, les gouvernements ont tendance à hausser les normes de performance exigées et à renforcer et multiplier les règlements. L'industrie minière reconnaît qu'il faut protéger l'environnement mais elle est inquiète lorsque les règlements n'ont pas de base scientifique, lorsqu'ils sont techniquement irréalistes ou lorsqu'ils sont inutilement contraignants et d'application coûteuse. L'industrie minière est également inquiète du fait que les gouvernements peuvent renforcer excessivement les règlements si le public ne veut pas reconnaître le niveau élevé de performance environnementale déjà atteint.

Les stratégies appropriées de l'industrie minière ont pour but, tout d'abord, de continuer à améliorer la performance lorsque des carences existent et, ensuite, de s'assurer que les réalisations et les progrès de l'industrie minière pour ce qui est de la protection de l'environnement seront reconnus ainsi que le fait de respecter les règlements.

Du point de vue de l'industrie, il est important que les gouvernements adoptent des stratégies élaborées avec clairvoyance pour protéger l'environnement. Ces stratégies devraient équilibrer efficacement les objectifs de la protection avec les moyens de l'industrie minière. Elles devraient permettre d'établir des directives et des règles claires pour l'industrie minière. Par ailleurs, ces stratégies devraient faire connaître au grand public la performance environnementale de l'industrie minière. De plus, les gouvernements peuvent influencer, positivement ou négativement, la capacité financière des sociétés minières qui doivent assumer leurs responsabilités pour la protection de l'environnement. Il n'est pas nécessaire d'indemniser de telles responsabilités. Cependant, un traitement fiscal équitable en ce qui concerne les dépenses à des fins environnementales comme la récupération des sites miniers et un allégement du fardeau des règlements d'application coûteuse aideraient beaucoup les sociétés minières à assumer leurs responsabilités à l'égard de l'environnement.

La question du «fardeau des règlements d'application coûteuse» est suffisamment importante pour faire l'objet d'un chapitre spécial (cf Chapitre 5).

Initiatives de l'industrie minière

Durant l'un de ses ateliers de planification stratégique, le Comité exécutif de l'AMC a examiné l'état de la performance environnementale de l'industrie minière et il a évalué dans quelle mesure la perception des autorités gouvernementales et du public est à la hauteur de cette performance. Tous les membres de l'atelier susmentionné ont admis que l'industrie minière doit améliorer son image de marque en ce qui concerne sa performance environnementale. Par ailleurs, tous ont reconnu que pour améliorer l'image de marque de l'industrie minière, il va falloir démontrer les efforts faits pour réduire l'impact des opérations sur l'environnement.

Voici les éléments de la stratégie retenue :

- Performance environnementale :

  * employer la politique environnementale et les directives de l'AMC pour inciter les sociétés-membres à recourir aux meilleures normes disponibles pour la gestion de l'environnement;

  * envisager la mise en oeuvre d'autres aspects de l'autorégulation;

  * démontrer que l'industrie minière s'est engagée à faire un développement soutenable;

  * évaluer l'amélioration de la performance de l'industrie minière.

- Informer le public et les groupes intéressés :

  * publier les améliorations de la performance ayant été évaluées;

  * distribuer à grande échelle la politique environnementale de l'AMS et ses directives;

  * répondre aux préoccupations des activités et communiquer directement avec eux;

  * faire connaître les «réussites».

Des rôles spécifiques ont été suggérés pour que l'AMC puisse faciliter l'autorégulation dans l'industrie minière, par exemple en incitant les dirigeants à respecter la politique environnementale et les directives et en développant de concert avec les associations minières provinciales un programme d'intervention en cas d'urgence.

Les membres de l'atelier ont également recommandé que l'AMC élabore, en premier lieu, une proposition détaillée pour régler la question considérée et, en deuxième lieu, qu'elle commence à définir les éléments d'un système de gestion pour la performance environnementale.

Les activités ayant couramment lieu au sein de l'AMC ne constituent pas le seul moyen d'améliorer la performance environnementale. Le programme MEND (Mine Environment Neutral Drainage) permet de poursuivre les travaux visant à améliorer la technologie en ce qui concerne la vidange de l'acide des mines. Les sociétés minières constituent également des centres de recherche où des innovations techniques permettront à ces sociétés de perfectionner leurs moyens de protection de l'environnement durant les opérations d'extraction, de fusion et d'affinage des matériaux.

Stratégies pour les gouvernements

Les initiatives gouvernementales qui permettront à l'industrie minière d'optimiser sa performance environnementale sont de trois sortes : (1) établir des objectifs et des normes de protection; (2) fournir des stimulants financiers et accorder un traitement fiscal équitable; et (3) s'assurer que le public est mis au courant de la performance environnementale.

Lors de l'établissement des objectifs de la protection de l'environnement, les gouvernements consultent généralement les dépositaires d'enjeux concernés. L'AMC approuve cette procédure et elle y participe activement. Lorsque la consultation n'a pas lieu ou lorsqu'elle n'est faite que pour la forme, l'expérience a montré que des erreurs majeures peuvent se produire dans les politiques d'intérêt public. Grâce à la consultation les hauts fonctionnaires sont convenablement informés au sujet de la situation de l'industrie minière et les cadres supérieurs de cette industrie peuvent connaître les objectifs gouvernementaux. Les échanges d'informations constituent une bonne base pour l'élaboration des règlements qui permettront aux sociétés minières d'améliorer leur performance à mesure que leurs moyens techniques se développeront.

Diverses initiatives gouvernementales peuvent avoir une influence positive ou négative sur la capacité ou la motivation permettant aux sociétés minières d'améliorer leur performance environnementale.

La nécessité de financer d'avance les opérations découlant des responsabilités environnementales peut majorer les coûts selon le type (nature, quantité et forme) de la nécessité. Si ce financement est important du côté économique du projet, il sera nécessaire de prévoir un taux de rendement élevé pour attirer les investissements. Tout projet ayant un rendement marginal pourrait être abandonné.

Un traitement fiscal défavorable à l'égard des dépenses engagées à des fins environnementales peut également exercer un effet de dissuasion sur les projets miniers.

Lorsque les gouvernements majorent le coût des projets soit directement soit en n'accordant pas un traitement fiscal équitable, c'est théoriquement un facteur freinant les dépenses engagées pour la protection de l'environnement. Dans la pratique, il est peu probable qu'une

telle situation nuise à la performance environnementale, à moins que les moyens financiers destinés à la protection de l'environnement soient insuffisants. De nos jours, il est peu probable qu'un projet soit autorisé par un gouvernement ou par une société minière si son niveau de performance environnementale risque de laisser à désirer. La viabilité d'un projet marginal sera probablement davantage en jeu que la performance environnementale.

Par contre, les gouvernements peuvent encourager fortement l'industrie minière à protéger comme il faut l'environnement. Quelques exemples suffiront. Si des garanties sont requises pour l'avenir, le traitement fiscal peut être ajusté pour compenser au moins une partie de ce coût additionnel. Des stimulants financiers effectifs peuvent être octroyés pour des travaux de recherche et de développement visant à améliorer les techniques et à concevoir des procédés moins coûteux pour la récupération des sites miniers. Les investissements destinés à la modernisation des installations peuvent être encouragés si cette modernisation ira de pair avec une importante amélioration de la protection de l'environnement.

Finalement, les gouvernements peuvent aider l'industrie minière à faire connaître les bonnes performances environnementales. Parmi les nombreux moyens promotionnels disponibles, on peut citer les programmes de récompense, les publications relatives aux progrès réalisés dans les sites miniers pour protéger l'environnement et les discours appropriés des porte-parole des gouvernements. Le fait de donner de bons exemples de la façon dont l'industrie minière répond aux préoccupations relatives à l'environnement, peut dissiper les appréhensions du public au sujet de la capacité des sociétés minières de relever les futurs défis.

Le développement soutenable est un objectif incontournable. Aucune mesure à court terme n'est possible. C'est pourquoi les gouvernements et l'industrie minière elle-même doivent planifier des mesures à long terme pour que des améliorations techniques, opérationnelles et financières puissent être obtenues.

De plus, des programmes conjoints pourraient être conçus pour que les moyens de l'industrie minière soient mis à la disposition des gouvernements en cas de désastre environnemental. Par exemple, l'Association minière ontarienne a offert d'aider le gouvernement de l'Ontario en cas de désastre environnemental ayant rapport à l'industrie minière (comme par exemple la rupture d'un barrage de retenue des résidus de minerais). Ailleurs au Canada, l'industrie minière est prête à fournir des conseils et des moyens techniques aux divers gouvernements dans des circonstances semblables.

Il serait avantageux pour les gouvernements et pour l'industrie minière d'aborder conjointement, selon une stratégie appropriée, l'exploitation minière et l'environnement tout en informant davantage le public.

Par conséquent, l'industrie minière recommande :

Recommandation

1. **Que les ministres des Mines chargent un groupe de travail mixte, comprenant des représentants des gouvernements et de l'industrie minière, d'examiner la**

performance environnementale de l'industrie minière, de suggérer les domaines importants pour l'avenir et de sensibiliser davantage le public au sujet des progrès faits dans la protection de l'environnement par l'industrie minière.

Chapitre 5

RÉGLEMENTATION CROISSANTE : INCERTITUDE ET COÛT DE L'APPLICATION DES RÈGLEMENTS

Énoncé de la question

Un certain nombre de questions distinctes relevant des domaines de l'environnement et de la santé sont liées à la réglementation gouvernementale qui s'intensifie actuellement. Le contenu, la forme ou la procédure de cette réglementation alourdit beaucoup le fardeau financier des règlements imposés à l'industrie minière. Les coûts additionnels sont dûs, entre autres, aux facteurs suivants : retards dans l'approbation des projets; coût accru de l'application des règlements; incertitude causée par des changements d'objectifs et de règles; risques résultant de lourdes responsabilités imposées; et restriction des marchés. En somme, les risques, l'incertitude et les retards accroissent le coût des projets et entravent les investissements.

Les questions relatives à la réglementation peuvent être résumées comme suit :

- **La réglementation croissante et le chevauchement des responsabilités en ce qui concerne l'évaluation des projets engendrent la crainte que le coût des projets augmentera dans l'avenir et créent une incertitude quant au développement de réserves minières commerciales.**

  En colombie-Britannique, par exemple, l'industrie minière ne peut plus supposer que l'exploitation minière pourra avoir lieu sur des sites spécifiques même lorsque les réserves sont abondantes et ont une grande importance économique (p. ex. Windy Craggy). Cette situation résulte de l'effet cumulatif de la croissance des réglementations fédérales et provinciales et du chevauchement des juridictions.

- **Le changement des normes environnementales et des critères de l'exploitation minière engendre de l'incertitude, des retards et la crainte d'une réglementation de plus en plus défavorable dans l'avenir.**

  Lorsque le climat des dispositions réglementaires est stable, les investissements sont privilégiés. Les sociétés minières peuvent supporter certains changements de règles, mais la perspective de changements constants de règlements et de normes engendre de l'incertitude quant à la future réglementation gouvernementale. Un «facteur de sécurité» doit pouvoir être pris en compte dans les décisions relatives aux investissements.

  À l'heure actuelle, le pronostic ayant trait aux législations fédérales et provinciales concernant l'environnement donne des changements importants et un renforcement des normes et des critères. L'objectif du projet de loi C-13 du gouvernement fédéral est

de renforcer les dispositions de la procédure d'évaluation de l'environnement. Dans les provinces, notamment en Colombie-Britannique de nouvelles lois sur les mines et sur l'évaluation de l'exploitation minière, accompagnées de règlements et de codes, redéfinissent les normes s'appliquant à l'environnement. Le Plan vert du Canada prévoit d'autres mesures semblables.

- **Les amendements «hostiles» insérés dans les règlements accentuent la grisaille du climat qui freine les investissements.**

  Certains types de législation comme la Déclaration des droits relative à l'environnement adoptée à la hâte par l'assemblée législative des Territoires du Nord-Ouest et la loi de l'Ontario imposant de strictes normes de responsabilité aux sociétés minières et à leurs administrateurs, sont généralement perçus dans l'industrie minière comme hostiles au commerce et au développement économique.

- **Des conventions et des normes internationales sont parfois importées au Canada sans songer suffisamment aux dommages qu'elles peuvent faire à l'industrie minière canadienne.**

  On peut donner comme exemple «les restrictions de marché causées par le risque que certains produits font courir à la santé». Cette question a été examinée lors d'un atelier de planification stratégique formé par le Comité exécutif de l'AMC. La nature internationale de la question a été soulignée. Il s'agit d'une importation au Canada de produits provenant d'autres pays ou d'organisations internationales. Par exemple, des produits spécifiques sont réglementés sur la base de leur toxicité intrinsèque plutôt que sur la base du risque qu'ils font courir aux personnes qui les utilisent.

  La conférence des Nations Unies sur l'environnement et le développement devant avoir lieu au Brésil en 1992 sera une autre source potentielle de règlements que le Canada sera prié d'adopter. L'industrie minière procède à des consultations en marge de cette conférence afin de s'assurer que l'on tiendra compte du système économique canadien, unique en son genre, et de la spécificité de l'industrie minière et des autres industries exploitant les ressources naturelles.

Initiatives et stratégies de l'industrie minière

Ces questions ont toutes tendance à accroître les risques, l'incertitude et les coûts de l'application des règlements pour l'industrie minière. Pour faire face à ces difficultés, la stratégie de cette industrie va consister d'abord à sensibiliser davantage le public quant à l'impact des règles gouvernementales sur le côté économique des projets miniers et sur les investissements. Ensuite, l'industrie minière s'efforcera d'obtenir un contexte de dispositions réglementaires stables où les normes répondront à un besoin démontré et correspondront aux moyens de cette industrie.

Cependant, étant donné que les questions abordées sont de types différents, on peut s'attendre à ce que les stratégies de l'industrie minière varient et soient conçues en fonction de la nature de chaque question.

À titre d'exemple, l'atelier formé par l'AMC a élaboré les éléments d'une stratégie pour relever le défi des restrictions de marché engendrées au plan international. Les membres de l'atelier ont suggéré, tout d'abord, que l'industrie minière prenne l'initiative de conclure une entente avec le gouvernement fédéral quant à la nature et à l'impact de la question et, ensuite demande que l'évaluation des risques soit incorporée dans la procédure de développement des politiques du gouvernement fédéral ainsi que dans les négociations internationales. Cette stratégie serait complétée par une campagne d'information du public en Amérique du Nord, y compris par l'intermédiaire de la presse de Washington et par des communications destinées au public afin de souligner le rôle et l'importance des métaux employés. Finalement, les membres de l'atelier ont recommandé des stratégies pour traiter avec les organismes internationaux et pour créer un réseau international d'information. Ils ont fait savoir que des étapes sont actuellement franchies dans cette direction par le Conseil international sur les métaux et l'environnement, organisme fondé en 1991 suite à l'initiative de l'AMC.

Principes de réglementation

Pour aborder de façon plus générale les problèmes de la réglementation croissante, des risques accrus, de l'incertitude et du coût de l'application des règlements, l'AMC préconise les principes de réglementation résumés ci-dessous :

- Les gouvernements, l'industrie minière et les autres dépositaires d'enjeux devraient se consulter le plus possible lorsque les opérations minières font l'objet de règlements amendés ou de nouveaux règlements concernant l'environnement et la santé.

- Les normes et les critères devraient être établis sur la base d'un besoin démontré et ils ne devraient pas être un lourd fardeau économique. Leur application devrait être raisonnablement assortie aux moyens techniques et économiques de l'industrie minière.

- Les responsabilités environnementales imposées aux sociétés minières et à leurs administrateurs devraient être équitables et proportionnées aux opérations et aux activités des sites réglementés.

- Les responsabilités du gouvernement fédéral et des gouvernements provinciaux, en ce qui concerne la réglementation environnementale, devraient être clairement définies et

s'il le faut, ces responsabilités devraient être révisées pour éliminer toute duplication et s'assurer que les réglementations sont complémentaires et non additionnelles.

- Les évaluations environnementales, sociales et économiques et les autorisations requises pour l'exploitation minière ou les développements hydroélectriques connexes, nécessitent des interactions entre les agences gouvernementales et les promoteurs et elles devraient être coordonnées au plus haut niveau des administrations concernées.

- Lorsque des initiatives et des conventions étrangères ou internationales peuvent constituer une base pour des mesures ou des normes relatives à l'environnement et à la santé au Canada, les agences gouvernementales canadiennes devraient entrer en communication sans tarder avec l'industrie minière au cas où celle-ci serait pénalisée par ces mesures.

Pour un gouvernement qui désire intégrer les prises de décision économiques et environnementales, les principes de réglementation susmentionnés constituent une philosophie et une pratique nécessaires. Philosophiquement, tout gouvernement devrait s'efforcer de réglementer d'une façon ne donnant lieu à aucun fardeau ou coût dépassant le niveau d'une réglementation équitable. En élaborant ses règlements le gouvernent doit communiquer immanquablement avec les dépositaires d'enjeux, particulièrement lorsque les normes ou les critères de la réglementation pourraient être modifiés.

Le gouvernement fédéral et les autres gouvernements élus au Canada doivent minimiser la duplication de leurs règlements. Cette question est extrêmement importante. L'AMC et les associations minières des provinces et des territoires considèrent que les conférences annuelles des ministres des Mines et les études qui en découlent constituent un instrument important pour harmoniser les initiatives gouvernementales et pour faire mieux connaître aux autorités les effets que la duplication peut avoir sur l'industrie minière.

Initiatives conjointes gouvernement/industrie

Les communications entre les gouvernements et l'industrie minière, au sujet des règlements s'appliquant à l'environnement et à la santé, sont déjà bien établies au Canada. Dans quelques cas, particulièrement lorsqu'il s'est agi de normes et de conventions internationales, l'absence de communication dans le passé a eu pour résultat la détérioration potentielle des opérations canadiennes ou des marchés où se vendent les métaux. Comme les membres de l'atelier de l'AMC l'ont indiqué, il est urgent de régler cette question. Si la question est déjà passée dans le domaine public, il est peut-être trop tard pour la régler.

Recommandation

2. **Il est recommandé que le ministre fédéral de l'Énergie, des Mines et des Ressources collabore étroitement avec l'industrie minière et d'autres ministères en ce qui concerne les questions relatives aux affaires étrangères et internationales.**

Bien que l'AMC recommande aux gouvernements les principes de réglementation susmentionnés, il est à noter que d'une façon générale, ces principes ne constituent pas à l'heure actuelle une question que les ministres des Mines peuvent régler unanimement. Une exception est la duplication des règlements fédéraux et provinciaux dans les domaines de l'environnement et de la santé. Un comité mixte comprenant des représentants du gouvernement et de l'industrie minière pourrait utilement examiner ce problème et présenter les résultats de l'examen lors d'une future réunion des ministres des Mines.

Recommandation

3. **Il est recommandé que les ministres des Mines considèrent l'établissement d'un comité mixte comprenant des représentants des gouvernements et de l'industrie minière pour examiner la duplication des règlements du gouvernement fédéral et des gouvernements provinciaux et territoriaux ainsi que les procédures d'évaluation employées dans les domaines de l'environnement et de la santé, dans la mesure où ces procédures ont des répercussions dans l'industrie minière, l'objectif étant d'obtenir une meilleure complémentarité dans les diverses réglementations.**

Chapitre 6

RÉCUPÉRATION DES SITES MINIERS, MISE HORS SERVICE DES MINES ET OBLIGATIONS APRÈS FERMETURE

La question de la déduction fiscale pour les dépenses couvertes par un fonds mandaté par un gouvernement pour la récupération des sites miniers

Lors des trois dernières conférences annuelles les ministres des Mines ont reçu des rapports du groupe de travail intergouvernemental sur la récupération des sites dans l'industrie minière. (Voir les rapports : Aspects administratifs et économiques de l'évacuation de l'acide (1988); Traitement fiscal des dépenses engagées pour la récupération des sites miniers (1989); et Traitement fiscal des fonds mandatés par un gouvernement pour la récupération des sites miniers (1990).

Les auteurs du rapport sur l'évacuation de l'acide ont évalué l'ampleur du problème et ils ont estimé que le fardeau des coûts des travaux de récupération pour stabiliser les déchets et les résidus acides est lourd sur les sites où l'on exploite des métaux communs non ferreux. La facture pourrait s'élever à environ 150 millions de $ annuellement pendant 20 ans, ce qui représenterait 2,4 % du revenu brut de l'industrie minière (pp. 1-2). Voici un extrait du rapport :

> «L'impact est comparable à l'imposition d'une taxe provinciale de 18 à 20 % sur les bénéfices d'exploitation des mines. Cependant, les coûts de la récupération des sites seraient exigibles, que la mine soit rentable ou non.» (p. 2)

Par ailleurs, les auteurs du rapport de 1988 ont passé en revue l'état de la technologie et le régime normatif dans certaines juridictions et ils ont fait quelques commentaires sur le traitement fiscal des dépenses engagées pour la récupération des sites miniers. Cependant, les auteurs des deux autres rapports ont examiné en détail la question du traitement fiscal des dépenses engagées pour la récupération des sites. Voici un extrait des conclusions du rapport de 1990 :

> «Les membres du groupe de travail ont conclu que l'on peut recommander chaudement l'exemption fiscale des sommes versées dans un Fonds de récupération de sites miniers. Cette conclusion est basée sur une argumentation justifiant l'exemption fiscale en vertu des principes de l'impôt sur le revenu, des précédents statutaires et des pratiques comptables généralement acceptées.» (p. 16)

Actuellement, les dépenses engagées pour la récupération des sites sont déductibles en tant que frais d'exploitation. Cependant, toute contribution apportée à un fonds mandaté par un gouvernement provincial est déductible seulement si elle est «irrévocable» et si elle n'a pas la nature d'une redevance ou d'un impôt. (Politique administrative énoncée par l'hon. O. Jelinek, ministre du revenu national).

Bien qu'une certaine satisfaction puisse résulter de la position prise par Revenu Canada, il est à noter qu'il s'agit d'une position administrative ayant deux exigences restrictives, à savoir :

- aucune partie de la contribution ne peut être reprise par le payeur ou la payeuse;
- aucune partie de la contribution ne peut être ni un impôt ni une redevance provinciale.

L'industrie minière, par l'intermédiaire de l'Association minière du Canada (AMC) appuyée par EMR et les ministres provinciaux des Mines, a fait une proposition au ministère des Finances pour que soit amendée la Loi de l'impôt sur le revenu afin qu'une déduction pour les contributions à un fonds prescrit pour la récupération des sites soit permise.

Voici trois propositions relatives aux bénéfices du fonds :

A. Les bénéfices ne sont assujettis à l'impôt que lorsque le solde du fonds est versé (c'est donc un régime enregistré d'épargne-récupération).

B. Les bénéfices restent dans le fonds mais la société minière doit payer l'impôt perçu sur les bénéfices considérés comme un revenu ordinaire pour lequel on paye l'impôt au fur et à mesure que l'on gagne. Les versements provenant du fonds, moins les sommes précédemment imposées, sont imposables. (Cette proposition correspond à la position administrative de Revenu Canada mais sans les exigences restrictives).

C. Les bénéfices restent dans le fonds. Ils sont imposés au fur et à mesure qu'ils s'accumulent, comme dans la proposition B et chaque versement est imposable en entier.

L'industrie minière préférerait la proposition A mais elle accepte la proposition B pour le moment, tandis que Finances Canada suggère la proposition C comme «option fiscale neutre». De fait, la proposition C impose deux fois les bénéfices du fonds, ce qui est complètement inacceptable pour l'industrie minière.

Le 23 juillet à Toronto, des fiscalistes et d'autres représentants de l'AMC et des associations minières du Québec, de l'Ontario et de la Colombie-Britannique, ont assisté à une réunion ratée avec des fonctionnaires de Finances Canada au sujet des propositions susmentionnées. Les fonctionnaires semblaient peu disposés à favoriser une solution qui permettrait à l'industrie minière d'avoir une situation financière plus favorable que celle qu'elle a en vertu des dispositions fiscales actuellement en vigueur.

Par conséquent, il semble que les ministres des Mines devront redoubler d'efforts pour attirer l'attention du ministre des Finances sur cette importante question.

Recommandation

4. **Il est recommandé que les ministres des Mines soumettent de nouveau au ministre des Finances leurs recommandations relatives à la déductibilité, aux fins de l'impôt sur le revenu, des dépenses engagées pour la récupération de sites miniers, ces dépenses étant couvertes par un fonds mandaté par un gouvernement et il est également recommandé que les ministres des Mines cherchent à obtenir rapidement des réponses à leurs questions.**

Autres questions relatives à la récupération des sites miniers

Après avoir étudié le traitement fiscal s'appliquant aux dépenses engagées pour la récupération des sites miniers, les membres du groupe de travail de l'AMC ont reconnu que l'industrie minière et les autorités gouvernementales sont très préoccupées par les exigences actuelles et éventuelles des gouvernements provinciaux et territoriaux en ce qui concerne les différentes formes de garantie financière permettant aux sociétés minières d'assumer comme il faut leurs responsabilités à l'égard de la récupération des sites miniers, de la mise hors service des mines et des obligations après fermeture. Depuis la conférence 1990 des ministres des Mines, les gouvernements par l'intermédiaire du groupe de travail intergouvernemental et l'industrie minière par l'intermédiaire de l'AMC et des associations minières des provinces et des territoires ont poursuivi leurs travaux dans le domaine de la récupération des sites. La prochaine section du présent chapitre traite des progrès faits par l'industrie minière pour déterminer une position nationale sur la question de savoir ce qu'est une «garantie financière raisonnable».

Les membres de l'atelier de l'AMC ayant examiné la question de la «récupération des sites» se sont penchés également sur trois autres questions connexes. Voici ces questions :

(1) Les normes en vigueur ou prévues pour la fermeture d'une mine.

(2) Le développement d'une technologie nouvelle pour permettre à l'industrie minière de répondre aux exigences prévues pour les activités de récupération des sites lorsqu'il n'y a pas d'approche satisfaisante.

(3) La façon de traiter les anciennes mines, à savoir : (a) les mines abandonnées et (b) les mines en sommeil appartenant à un opérateur solvable.

En ce qui concerne les «normes» à respecter lors de la fermeture d'une mine, les membres de l'atelier de l'AMC ont proposé pour l'industrie minière les objectifs suivants :

* Retourner à un «état non inférieur à l'état original», mais ne pas «améliorer le site».

* Les sociétés minières doivent garder une bonne souplesse d'approche.

* Pour l'évacuation de l'acide des mines, il faut respecter les normes s'appliquant à l'eau qui sort du site, mais non à «l'extrémité du tuyau».

Les membres de l'atelier ont suggéré que l'AMC appuie les efforts faits par les associations minières provinciales afin d'obtenir l'approbation de normes appropriées et l'AMC devrait coordonner avec les associations provinciales l'élaboration de la position de l'industrie minière en ce qui concerne la question des «normes de départ» et autres questions semblables.

Les membres de l'atelier de l'AMC ont reconnu que la technologie doit être développée davantage pour permettre à l'industrie minière de se conformer aux exigences prévues pour certaines activités de récupération des sites. Le programme MEND est une initiative de l'industrie minière particulièrement importante qui permet aux sociétés minières de travailler de concert pour régler le problème de l'évacuation de l'acide des mines.

En ce qui concerne les mines fermées, les membres de l'atelier de l'AMC ont suggéré que s'il existe des opérateurs solvables leur société devrait supporter les frais de récupération.

Voici les suggestions pour les mines abandonnées :

* aucun recours à l'industrie minière n'est prévu;

* les gouvernements provinciaux devraient supporter les frais de récupération des sites;

* l'établissement d'un «fonds spécial» pour l'ensemble de l'industrie minière est hors de question.

Pour ce qui est des mines fermées, l'AMC préfère le concept «Évacuation nocive zéro» pour définir la norme plutôt que le concept «Évacuation zéro».

Garantie financière pour la récupération des sites

En avril 1991, l'AMC en collaboration avec les associations minières des provinces et des territoires et avec l'Association houillère du Canada a publié un document d'étude intitulé : Garantie financière pour la récupération des sites miniers, la mise hors service des mines et les obligations après leur fermeture. (Voir pièce jointe n° 1)

Après une série d'ateliers ayant réuni des décideurs et des experts de l'industrie minière le document d'étude a été préparé comme énoncé général de la politique de cette industrie. On a reconnu que les associations et les sociétés minières pourraient souligner certaines parties de la politique ou même développer cette politique pour répondre aux besoins locaux.

Le document d'étude comprenait un énoncé des principes de base pouvant être insérés dans la législation. L'industrie minière pourrait recommander aux gouvernements d'adopter ces principes. Le document d'étude comprenait également des commentaires sur la définition de «garantie financière raisonnable». Voici la conclusion du document d'étude :

> «Les gouvernements exigent de plus en plus que les sociétés minières fournissent des devis techniques et une garantie financière pour la récupération des sites. L'industrie

minière a réagi au moyen de réunions avec les autorités gouvernementales. Par ailleurs l'industrie minière a mis au point sa position générale afin que les associations et les sociétés minières puissent s'entretenir en connaissance de cause avec les fonctionnaires concernés.

L'industrie minière est prête à aider les gouvernements à élaborer des règlements s'appliquant à la garantie financière pour la récupération des sites, afin que ces règlements soient efficaces et économiquement sains et efficients.» (p. 8)

L'industrie minière offre de nouveau son aide. Les membres de l'atelier de l'AMC ont réaffirmé la nécessité pour cette industrie d'avoir de l'influence auprès des législateurs préparant les règlements qui s'appliqueront au financement de la récupération des sites miniers. Par ailleurs, les membres de l'AMC ont indiqué de nouveau que l'industrie minière est fortement d'avis qu'un fonds spécial pour la récupération des sites, au plan national ou au plan provincial, n'est pas souhaitable.

L'industrie minière est convaincue que si le gouvernement exige l'établissement d'un fonds en fiducie et si une société minière veut en établir un, ce fonds sera géré par ladite société. Un tiers indépendant, comme par exemple une compagnie de fiducie, serait un fiduciaire acceptable pour le fonds.

La question de la garantie financière est si importante pour l'industrie minière que l'AMC et les associations minières des provinces et des territoires désirent présenter directement aux ministres des Mines la recommandation suivante émanant des principes et des conclusions du document d'étude susmentionné :

Recommandation

5. **Il est recommandé que les ministres des Mines s'assurent que des principes valides sous-tendront les lois et les règlements qui obligeront les sociétés minières à fournir une garantie financière pour la récupération des sites (y compris toutes les exigences en matière de récupération, de mise hors service et d'obligations environnementales après la fermeture). Voici les principaux principes recommandés :**

   * **Toute proposition de projet minier ne devrait pas être réalisée si le financement de la récupération éventuelle du site ne pouvait pas être garanti.**

   * **Chaque propriétaire de mine (y compris le cas échéant, un entrepreneur associé) doit assumer la responsabilité des frais de récupération liés à ses opérations et il devra éventuellement payer la note de la remise en état des lieux.**

   * **Il ne devrait pas y avoir de fonds spécial à la grandeur de l'industrie minière pour couvrir tous les frais de récupération des sites miniers.**

* Si un fonds en fiducie était mandaté par un gouvernement, il faudrait que ce fonds soit géré par une société minière intéressée. Un tiers indépendant, comme par exemple une société fiduciaire pourrait convenir pour gérer le fonds.

* Une période appropriée d'adaptation progressive aux nouveaux règlements est nécessaire pour permettre aux sociétés minières de se préparer à les appliquer.

* Le plan approuvé de mise hors service doit être basé sur les normes en vigueur au moment de l'approbation.

* Les gouvernements devraient accepter l'extinction des obligations environnementales d'un propriétaire de mine lorsque les objectifs du plan de mise hors service de la mine ont été atteints. Il est important d'avoir une procédure claire pour que la garantie financière puisse entrer en jeu lorsque le travail de récupération est en cours et lorsqu'il prend fin.

* On ne doit pas demander aux mines en exploitation de supporter les frais de récupération de sites miniers abandonnés depuis longtemps par des propriétaires inconnus.

* Les sociétés minières ayant plusieurs succursales devraient pouvoir établir un pool de garantie financière pour couvrir éventuellement les frais de récupération des sites de toutes les succursales.

* De plus, en définissant la garantie financière «raisonnable» le gouvernement devrait permettre aux sociétés minières d'avoir recours à un crédit documentaire irrévocable, à une obligation de bonne exécution, déductible du revenu imposable, à un fonds de fiducie mandaté par un gouvernement ou à d'autres formes ou combinaisons de garantie pouvant être acceptés, dans les circonstances actuelles par le gouvernement concerné.

* Finalement, la législation devrait prévoir des dispositions appropriées pour obtenir l'aide d'ingénieurs ou de professionnels indépendants afin d'avoir des conseils, des moyens d'assouplissement, des services de médiation et/ou d'arbitrage pour régler les différends pouvant survenir lors du choix d'un arrangement financier et lors de l'établissement ou durant la gestion d'un fonds.

(Voir document d'étude, pp. 6-7, 9)

Chapitre 7

IMAGE DE MARQUE DE L'INDUSTRIE MINIÈRE

Le problème et la réaction de l'industrie minière

En 1989, l'AMC et les associations minières des provinces et des territoires ont commandé deux sondages qui ont montré que l'industrie minière ne bénéficie pas d'une image de marque très favorable. Le sondage de l'opinion publique par Angus Reid et le sondage COMPAS sur la perception des élites politiques ont révélé une opinion négative à l'égard de l'industrie minière, particulièrement dans les domaines actuellement préoccupants comme, l'environnement, la santé et la sécurité. Les résultats de ces sondages ont convaincu l'AMC que sans la compréhension et le support du public l'industrie minière devra très probablement faire face à des politiques gouvernementales encore plus strictes.

Compte tenu des conclusions d'un atelier sur les communications tenu en novembre 1989 et conformément aux directives de l'assemblée générale annuelle de l'AMC ayant eu lieu en juin 1990, le Comité des relations publiques de l'AMC en collaboration avec les associations minières provinciales a préparé un programme pour communiquer avec différents groupes, y compris les politiciens et les fonctionnaires. L'image de marque de l'industrie minière était l'une des questions importantes débattues en 1991 à l'atelier de planification stratégique de l'AMC. Ce débat a précédé l'approbation par le conseil d'administration de l'AMC, en mars 1991, du programme de communication avec le public.

Voici le préambule du programme de communication :

> «Dans l'ensemble les Canadiens et leurs gouvernements sont peu compréhensifs à l'égard de l'industrie minière. On apprécie la contribution économique de cette industrie mais on est très préoccupé par sa performance environnementale. On ne sait pas ce que les sociétés minières ont fait et ce qu'elles font pour améliorer leur travail afin de ménager l'environnement. Pourtant, les déclarations des cadres supérieurs de l'industrie minière relatives aux questions environnementales ne semblent guère crédibles.
>
> Une telle combinaison de mécontentement et d'incrédulité met l'industrie minière en crise et peut rendre extrêmement difficiles le climat législatif et normatif. Plusieurs initiatives inquiétantes ont été prises au cours des cinq dernières années : le Plan vert, la Loi sur le transport des produits dangereux, les restrictions relatives aux déchets nocifs, WHMIS, MISA, l'embargo sur l'amiante de l'EPA (agence américaine de protection de l'environnement) et quelques autres interdictions. Néanmoins, l'industrie minière prend actuellement des mesures sévères pour améliorer sa performance dans les domaines de l'environnement et de la santé, allant parfois au-delà des exigences législatives et normatives. Si le grand public et les gouvernements ne reconnaissent pas les efforts et la performance de l'industrie minière, il est probable que l'on devra continuer d'appliquer une législation restrictive.»

L'industrie minière doit faire face à quatre défis :

* législation et réglementation défavorables;

* perceptions négatives ou erronées;

* relations donnant lieu à des contradictions;

* performance passée de l'industrie minière.

Le programme proposé par l'AMC prévoit les objectifs de l'industrie minière et les stratégies à employer durant les années 1990. Plusieurs projets sont à l'étude et le plus prioritaire touche la vérification des communications. Le but de ce projet est d'évaluer les efforts de communication de l'industrie minière, d'améliorer la coordination avec cette industrie et d'établir une base d'information.

Initiatives des ministères des Mines

Le sondage de l'opinion publique commandé par l'AMC a montré que le grand public et les gouvernements manquent d'informations au sujet du rôle que l'industrie minière joue dans l'économie, dans l'environnement et dans la société. Tout comme les agriculteurs qui considèrent généralement le ministère de l'agriculture comme leur meilleur défenseur dans les milieux gouvernementaux, l'industrie minière apprécie l'intervention des ministères des Mines auprès des autres ministères pour leur faire connaître avec précision les réalités minières.

Cependant, dans les circonstances actuelles, l'industrie minière est d'avis que l'intervention des ministères des Mines doit être élargie pour que les réalités minières soient mieux connues au niveau provincial et au niveau fédéral. Cet élargissement de l'intervention des ministères des Mines devrait également susciter une meilleure compréhension du grand public à l'égard de l'industrie minière.

En particulier, l'industrie minière considère que les ministères des Mines ont déjà établi de très hautes normes pour la cartographie géologique et pour le repérage et l'évaluation des venues de minerai. Les mêmes hautes normes de professionnalisme devraient s'appliquer à d'autres domaines connexes comme la transformation de vastes étendues de terre en parcs, en terrains de jeux, en versants de partage des eaux et il ne faut pas oublier les revendications territoriales des Autochtones. Par ailleurs, les ministères des Mines ne devraient pas assumer toutes ces responsabilités. C'est ainsi que les autres ministères qui réglementent ou influencent la prospection des minerais et l'exploitation minière devraient avoir leur part de responsabilités.

Recommandation

6. **Il est recommandé que les ministères des Mines fournissent aux autres ministères du gouvernement fédéral et des gouvernements provinciaux et territoriaux les excellentes connaissances qu'ils ont dans de nombreux domaines miniers. Des**

programmes de sensibilisation devraient être établis dans les ministères des Mines pour susciter chez les décideurs gouvernementaux et dans le grand public une meilleure compréhension de l'importance du rôle de l'industrie minière dans l'économie et dans la société.

Chapitre 8

ACCÈS AUX TERRES ET UTILISATION DE CELLES-CI

Questions relatives à l'utilisation des terres

L'accès aux terres et l'utilisation de celles-ci dans des conditions raisonnables pour la prospection et l'exploitation minières est l'une des questions «importantes» préoccupant aujourd'hui l'industrie minière, selon les experts de la planification stratégique de l'AMC.

Les questions relatives à l'utilisation des terres découlent en grande partie des restrictions de divers types imposées à la prospection et à l'exploitation minières. Selon les régions le potentiel minier du Canada peut être considérable ou limité et c'est un fait que dans l'état actuel des connaissances géologiques et technologiques toutes les régions peuvent recéler des gisements miniers non pétrolifères exploitables commercialement de façon durable. Par conséquent, la recherche des métaux communs et des métaux précieux doit se faire sur de vastes étendues. Si les terres disponibles pour la prospection sont réduites à cause de restrictions s'appliquant à leur utilisation, alors les possibilités d'exploiter les ressources minières du Canada sont proportionnellement réduites.

Voici des questions connexes :

* Quels sont les effets locaux et cumulatifs que les restrictions et les annulations actuelles et futures s'appliquant à l'utilisation des terres peuvent avoir sur la prospection et l'exploitation minières?

* Est-ce que l'on tient suffisamment compte de l'évaluation du potentiel minier des terres lorsqu'on décide d'annuler l'accès à certaines terres ou d'interdire leur utilisation à des fins minières?

* Dans quelle mesure les revendications territoriales des Autochtones constituent-elles un facteur important de l'interdiction faite à l'industrie minière d'accéder à certaines terres ou serait-il possible d'y accéder dans des conditions raisonnables?

La création de nouveaux parcs et de zones protégées est l'une des causes de la réduction des terres disponibles pour la prospection et l'exploitation minières. Dans le «Plan vert du Canada» on indique qu'actuellement environ 6,9 % des étendues de terre et d'eau douce du Canada sont constituées de zones protégées par différentes juridictions ou par des organismes de conservation de la nature. Environ 1,8 % du territoire non marin du Canada est protégé dans des parcs nationaux. L'objectif fédéral est d'assurer que chacune des 39 régions terrestres du Canada est représentée dans un parc national. Ainsi, le réseau des parcs nationaux, une fois complété, couvrira environ 3 % de la totalité du territoire du Canada. Les centres nationaux de protection de la faune et des oiseaux migrateurs font également partie du réseau des terres préservées. Le gouvernement fédéral a tenu compte de la recommandation de la Commission Brundtland puisqu'on lit dans le Plan vert : «Nous devons intensifier nos

efforts pour atteindre l'objectif consistant à mettre de côté comme espace protégé 12 % du territoire total du Canada». (Plan Vert du Canada en bref, pp. 79-80).

Le degré de restriction imposé aux activités minières varie d'un type de zone protégée à l'autre et d'une juridiction à l'autre. En plus des formes de protection environnementale limitant l'utilisation des terres que l'on trouve dans le Plan vert, de vastes régions font également l'objet de restrictions pour d'autres raisons, comme par exemple les revendications territoriales des Autochtones, les installations destinées à la défense et l'expansion des régions urbaines. L'impact total sur la prospection et l'exploitation minières de toutes les formes de restrictions s'appliquant à l'utilisation des terres n'a jamais été convenablement évalué. L'initiative prise par l'industrie minière pour que soit établie une base de données permettant de faire cette évaluation est décrite dans la prochaine section du présent chapitre. Les autres questions concernant l'utilisation des terres et l'exploitation minière sont traitées dans les sections suivantes.

Terres réservées et le Comité de l'industrie minière sur l'accès au territoire

Un problème majeur pour l'exploitation ordonnée et continue des ressources minières du Canada est la limitation croissante des terres disponibles pour la prospection et par conséquent la réduction des possibilités de mise en service des mines. Durant les dernières années 1980 le problème a pris de l'ampleur par suite de l'effet cumulatif de plusieurs facteurs, à savoir : l'intensification des préoccupations environnementales; le développement du réseau des parcs nationaux (où la prospection et l'exploitation minières sont interdits statutairement pour toujours) et le développement d'autres types de zones protégées comme les parcs provinciaux où les activités minières sont assujetties à divers degrés de restrictions.

En réaction, l'Association minière du Canada (AMC), l'Association des prospecteurs et des promoteurs du Canada (APPC) et les associations minières des provinces et des territoires ont formé ce qu'on appelle maintenant le Comité de l'industrie minière sur l'accès au territoire (CIMAT) dont les membres sont les représentants de toutes les associations susmentionnées. Lors de la première réunion du Comité CIMAT, tenue à Vancouver le 28 juin 1989, un programme a été conçu pour permettre à l'industrie minière d'avoir accès aux terres, dans des conditions raisonnables, pour la prospection et l'exploitation minières.

La principale préoccupation du Comité CIMAT, au début, a été d'établir et de tenir à jour une base de données afin de pouvoir déterminer l'ampleur du problème. D'abord sous la présidence de M. Jack Garnett de Bedford (Nouvelle-Écosse) et actuellement sous la présidence de M. Ralph Cheesman de Regina (Saskatchewan) le Comité CIMAT a développé un système de données géographiques informatisées pour déterminer l'ampleur et la nature des restrictions limitant l'accès aux terres. Pour cette étude, le Comité a bénéficié de la coopération de EMR (Secteur de la politique minière), d'Environnement Canada et des ministères des Mines des provinces et des territoires. Les travaux de développement de la base de données ont été effectués avec compétence par le consultant Earth and Ocean Research Ltd. de Dartmouth (Nouvelle-Écosse) pour le compte de l'AMC.

Les résultats des travaux de développement de la base de données NATLUS (National Land Use) ont fait l'objet d'une démonstration à la récente Conférence des ministres des Mines. Il sera nécessaire de compiler d'autres données et de faire des analyses additionnelles pour montrer avec exactitude l'étendue et l'emplacement des terres faisant l'objet de divers degrés de restrictions et où la prospection et l'exploitation minières ne sont pas autorisées.

En attendant, le Comité CIMAT s'inquiète à cause de la hâte avec laquelle les autorités gouvernementales semblent vouloir appliquer la disposition du Plan vert prévoyant l'utilisation de 12 % du territoire total du Canada pour les parcs nationaux et les centres de protection de la nature. Le Comité CIMAT croit que la création de nouveaux parcs peut avoir des effets importants sur les futurs développements miniers et c'est pourquoi il pourrait fournir des données utiles pour l'examen des propositions du Plan vert. Lorsque des terrains sont publiquement désignés pour être inclus dans de nouveaux parcs sans indication préalable de leur potentiel minier, le Comité CIMAT craint que les plans de ces parcs sont fixés dans l'opinion publique et qu'ils ne sont plus «négociables» en ce qui concerne la possibilité d'utilisation multiples de ces terrains.

Le Comité CIMAT connaît la longue histoire de la collaboration des gouvernements et de l'industrie minière pour exploiter de façon ordonnée les ressources minières du Canada. Pour que l'exploitation minière soit maintenue à un niveau convenable, il faut que les ministères des Mines se fassent les défenseurs de l'industrie minière lorsqu'ils communiquent avec les autres ministères s'occupant de l'environnement, des parcs, des affaires amérindiennes et d'autres questions pouvant avoir des répercussions sur les activités minières.

Voilà une autre raison de prôner la Recommandation n° 6 qui se trouve à la fin du chapitre 7 du présent rapport. Il faudrait informer d'autres ministères et le public qu'il est nécessaire d'aborder les questions relatives à l'utilisation des terres dans un contexte de «gestion intégrée des ressources» et dans le vaste domaine du «développement soutenable».

De plus, il est important que le gouvernement fédéral et que les gouvernements provinciaux et territoriaux continuent de coopérer avec le Comité CIMAT pour la fourniture d'informations destinées à la base de données NATLUS. Le Comité CIMAT a l'intention de continuer de tenir à jour la base de données au moyen de ces informations. Par ailleurs, le Comité CIMAT a l'intention de rendre les données accessibles à toutes les parties du secteur privé et du secteur gouvernemental s'occupant du développement soutenable et de la planification de l'utilisation des terres ou intéressées à ces questions.

Dans l'avenir, lorsqu'une bonne base de données sur l'utilisation des terres aura été établie pour démontrer l'impact des terres réservées sur la prospection et l'exploitation minières, le Comité CIMAT portera son attention sur la communication aux gouvernements et au public des problèmes et des solutions concernant l'accès aux terres.

Recommandation

7. **Il est recommandé que le gouvernement fédéral et les gouvernements provinciaux et territoriaux continuent de fournir des informations pour la base de données NATLUS concernant l'utilisation des terres. Étant donné que la politique du**

Comité CIMAT prévoit une grande diffusion des informations collectées dans NATLUS, les organismes contribuant à cette base de données sont priés de fournir des séries d'informations appropriées dans des conditions qui n'entraveront ni l'utilisation du logiciel ni la grande diffusion des données.

Évaluation des nouveaux parcs et des ressources minières

Il semble y avoir une divergence notable en ce qui concerne la superficie estimée des parcs et leur superficie réelle, une fois établies. La superficie des nouveaux parcs proposés a été estimée dans le contexte du Plan vert mais l'AMC a l'impression que la superficie exacte n'a pas été déterminée avec précision. Le Secteur de la politique minière de EMR a évalué la superficie possible des nouveaux parcs sur la base de la superficie moyenne des parcs. En supposant qu'un parc ayant une superficie moyenne sera établi dans chacune des 18 régions naturelles pas encore décrites, il y aura dix nouveaux parcs nationaux dans le Nord ayant chacun une superficie moyenne de 24 000 km^2 et huit nouveaux parcs au sud du 60^e degré ayant chacun une superficie de 1 062 km^2. La superficie totale des terres devant être transformées en parcs nationaux pourrait donc s'élever à 240 000 + 8 496 = 248 496 km^2. En ajoutant les 210 419 km^2 des parcs existants, le total général serait 458 915 km^2, soit approximativement 4,6 % de la masse territoriale du Canada. Les 4,6 % du territoire seraient donc employés en l'an 2000 pour les parcs nationaux. Cela représente une superficie interdite à la prospection et à l'exploitation minières. Il est à noter que cette superficie est trois fois plus grande que la surface totale des trois provinces maritimes.

Cette estimation diffère de celle du Plan vert qui se limite à 3 % de la masse territoriale du Canada pour ce qui est de la superficie des parcs nationaux. La Division de la gestion des ressources de EMR effectue actuellement une analyse dans le but d'évaluer avec précision la superficie des nouveaux parcs et l'impact sur l'industrie minière.

L'imprécision en ce qui concerne l'étendue possible du réseau des parcs nationaux et son effet de réduction des activités minières constitue un véritable problème. Les immenses étendues de terre qui vont être réservées pour les parcs suscitent la question suivante : Est-ce qu'une évaluation convenable du potentiel minier est faite avant de prendre la décision de créer un nouveau parc?

Les ministres des Mines connaissent sans doute le procédé MERA qui permet d'évaluer le potentiel minier avant la création de nouveaux parcs dans les territoires. En ce qui concerne la création possible de dix nouveaux parcs dans le Nord vers l'an 2000, l'industrie minière a deux suggestions à faire :

* Il faut que la Direction des levés géologiques du Canada soit assurée d'avoir les moyens financiers et techniques nécessaires pour effectuer des évaluations MERA de haute qualité pour tous les nouveaux parcs.

* Il faut que les évaluations MERA soient effectuées à un stade précoce du processus de sélection des terres; de cette façon les limites des parcs ne seront pas fixées dans

l'esprit des responsables et des membres du public et la nécessité de modifier les limites des parcs pour accéder à de riches gisements de minerais sera réduite.

Recommandation

8. **Il est recommandé qu'Énergie, Mines et Ressources Canada participe activement au processus de sélection des terres destinées aux nouveaux parcs et obtienne suffisamment de fonds pour que la Direction des levés géologiques puisse effectuer la meilleure évaluation possible du potentiel des ressources minières à un stade précoce du processus de sélection des terres pour chacun des nouveaux parcs.**

Coopération de l'industrie minière avec les Autochtones

Les revendications territoriales des Autochtones constituent une autre raison de mettre des terres hors de portée des sociétés faisant de la prospection et de l'exploitation minières quoique, en général, seulement pour une période temporaire. Cependant, les revendications territoriales non réglées suscitent une incertitude quant à la possibilité d'accéder éventuellement à de vastes espaces de terres à prospecter. L'arrêt provisoire des activités minières en attendant le règlement d'une revendication territoriale ou durant le processus de sélection des terres met un frein à la prospection et à l'exploitation minières. De fait, les perspectives de développement sont obscurcies non seulement dans le Nord mais également dans certaines provinces, en particulier en Colombie-Britannique, à cause de revendications territoriales autochtones n'ayant pas été réglées. C'est pour ces raisons que l'industrie minière favorise le règlement rapide et satisfaisant de toutes les revendications territoriales autochtones en souffrance.

L'industrie minière est très satisfaite des communications qu'elle a avec le ministère des Affaires indiennes et du Développement nordique et avec les négociateurs gouvernementaux et autochtones depuis la publication des ententes de principe concernant les principales revendications territoriales au Yukon et dans les Territoires du Nord-Ouest. De plus, l'industrie minière est convaincue que les perspectives sont bonnes en ce qui concerne le changement sans heurt de propriétaires fonciers et l'instauration de régimes de réglementation et de planification pour l'utilisation des terres dans la Fédération Tungavik du Nunavut (FTN) et dans les districts contrôlés par le Conseil des Amérindiens du Yukon (CAY).

Pour créer de nouvelles occasions de contacts directs et de coopération, la FTN et la Chambre des mines des T.N.-O., l'APPC et l'AMC ont établi en 1990 un Comité mixte de travail comprenant des Inuit et des représentants de l'industrie minière. Avec le temps, ce Comité devrait devenir un point de mire pour améliorer les relations entre les Inuit et l'industrie minière en ce qui concerne toute la gamme des opportunités et des problèmes éventuels pouvant résulter de l'application du nouveau régime réglementant l'utilisation des terres. L'industrie minière a bon espoir que tout ira bien.

L'industrie minière a également proposé au CAY de former un groupe de travail semblable au Yukon comprenant des représentants des Amérindiens et de l'industrie minière. Cette proposition est actuellement étudiée par les bandes amérindiennes.

L'AMC n'a pas de recommandations spécifiques à faire aux gouvernements en ce qui concerne les arrangements qu'elle établit directement avec les Autochtones. Par ailleurs, l'AMC est d'avis qu'un règlement rapide des revendications territoriales des Autochtones sera avantageux à la fois pour les Autochtones eux-mêmes et pour l'industrie minière. En particulier, l'industrie minière espère qu'il sera possible de conclure un accord-cadre final à l'égard de la revendication du Conseil des Amérindiens du Yukon et qu'il sera également possible de résoudre les problèmes qui restent afin de pouvoir conclure des accords satisfaisants avec les Dene et les Métis qui vivent dans les Territoires du Nord-Ouest.

Recommandations

9. **Il est recommandé que les ministres des Mines s'efforcent par leurs bons offices d'obtenir rapidement un règlement satisfaisant pour mettre fin aux revendications territoriales des Autochtones dans le Nord et en Colombie-Britannique.**

Chapitre 9

RESSOURCES HUMAINES, ÉDUCATION ET FORMATION

Stratégie éducative

La compétitivité de l'industrie minière dépend dans une large mesure de la possibilité d'avoir des employés bien éduqués, compétents, formés pour remplir leurs tâches immédiates et capables de s'adapter aux conditions et aux exigences changeantes tout au long de leur carrière.

Les membres du Comité exécutif de l'AMC ont considéré que «le niveau de compétence et la formation» ont une grande importance pour l'industrie minière. Parmi les questions essentielles passées en revue, certaines concernaient les ressources humaines, comme : «la gestion de la main-d'oeuvre»; «comment équilibrer l'offre et la demande en ce qui concerne le personnel» et «l'emploi de professionnels dans les postes clés».

Le règlement de certaines questions peut dépendre d'initiatives des gouvernements, des syndicats ou de l'industrie minière ou de ces trois entités ensemble. Ces initiatives permettront de répondre aux besoins de l'industrie minière en matière de main-d'oeuvre compétente et adaptable et d'assurer aux employés une carrière intéressante. En juillet, deux documents d'étude ont été publiés par le gouvernement fédéral, l'un concernait l'éducation et l'autre la compétitivité. Ces documents peuvent donner lieu à un dialogue au cours duquel le point de vue de l'industrie minière et celui des syndicats pourront être exposés. Pour l'industrie minière, comme pour les autres industries, une main-d'oeuvre très qualifiée peut améliorer notablement la compétitivité.

En général, les sociétés minières comptent sur les gouvernements pour que les jeunes destinés à devenir des employés reçoivent au moins une éducation de base. Cette responsabilité incombe principalement aux gouvernements des provinces et des territoires, l'enseignement étant pourvu par les commissions scolaires locales ou par les collèges et les universités. Les sociétés minières doivent ajouter à cette éducation de base une formation technique répondant aux tâches spécifiques de l'industrie minière. Les futures employés devront pourtant avoir atteint un bon niveau de base en éducation et en aptitudes pour que la formation technique soit efficace.

Les opinions peuvent différer au sein de l'industrie minière quant à la suffisance des niveaux généraux de l'éducation au Canada. Sans aucun doute, il y a du mécontentement chez les employeurs. L'étude fédérale sur l'éducation sera appréciée si elle peut préciser les moyens qui permettront d'améliorer l'éducation et les aptitudes de base.

De plus, les cadres des sociétés sont conscients que dans de nombreux cas, des facteurs géographiques et culturels et une population clairsemée (comme dans le Nord) peuvent limiter l'embauche locale de travailleurs ayant atteint un niveau suffisant d'éducation et d'aptitudes. À tout prendre, les sociétés minières préfèrent embaucher la main-d'oeuvre locale quand elles le peuvent. C'est pourquoi l'industrie minière appuie les programmes visant à donner aux

Autochtones et aux résidents des communautés éloignées davantage d'occasions de s'instruire et d'obtenir des aptitudes de base.

L'étude sur les ressources humaines de l'industrie minière

Concernée par les questions relatives aux ressources humaines, l'AMC a fait bon accueil à l'initiative prise en juin 1990 par le député John MacDougall, secrétaire parlementaire de l'hon. Jake Epp, ministre d'Énergie, Mines et Ressources Canada, pour que soient étudiées les questions relatives à la formation de la main-d'oeuvre minière. Par la suite, l'AMC, conjointement avec United Steelworkers of America et avec l'Institut canadien des mines, de la métallurgie et du pétrole, a demandé à Emploi et Immigration Canada d'effectuer l'étude proposée. En annonçant, en juin 1991, que le gouvernement acceptait de faire cette étude, l'hon. Bernard Valcourt, ministre d'Emploi et Immigration Canada a déclaré ce qui suit :

> «Cette étude permettra d'évaluer la nature et l'ampleur des besoins en ressources humaines de l'industrie minière. Je suis heureux de voir que cette industrie supporte une approche pragmatique, basée sur la collaboration, qui vise à développer une stratégie pour une industrie qui doit relever des défis liés aux ressources humaines et qui s'est engagée à demeurer un chef de file mondial dans le domaine minier.» (Communiqué du 14 juin 1991)

L'AMC est disposée à faciliter la réalisation de ce projet et elle sera ravie de recevoir les résultats de l'étude, y compris les recommandations.

Participation des Autochtones

L'industrie minière reconnaît que la participation des Autochtones donne lieu à des exigences spéciales. Les gouvernements sont de plus en plus conscients que les groupes autochtones eux-mêmes doivent, tout comme l'industrie minière, participer à l'élaboration des programmes visant à encourager les Autochtones à travailler dans le domaine minier.

L'AMC pense que le groupe de travail intergouvernemental sur la participation des Autochtones à l'exploitation minière a une importante mission à remplir. Cette enquête permettra d'obtenir de précieuses informations de base quant à la participation actuelle des Autochtones dans les activités minières, quant aux styles de vie des communautés autochtones et quant aux possibilités pour les Autochtones de s'instruire et de développer leurs aptitudes.

Il faudrait mettre au point sans tarder des programmes permettant aux Autochtones de participer à la prospection et à l'exploitation minières, aux opérations minières et aux activités de petites entreprises connexes. Il est urgent d'élaborer des stratégies à long terme pour le bien des Autochtones, de l'industrie minière et du Canada dans son ensemble.

Recommandation

10. **Il est recommandé que les ministres des Mines donnent un haut rang de priorité aux travaux du groupe de travail intergouvernemental sur la participation des Autochtones aux opérations minières et exhortent l'industrie minière à faire sa part dans ce domaine.**

Chapitre 10

QUESTIONS RELATIVES À LA PROSPECTION MINIÈRE

Un rapport parallèle préparé pour l'industrie canadienne de la prospection a été présenté aux ministres des Mines par l'Association des prospecteurs et des promoteurs du Canada (APPC). Par conséquent, nous ne ferons que commenter brièvement quelques questions pouvant intéresser les producteurs.

État des réserves de métaux communs

Les programmes gouvernementaux ayant pour but de faciliter la prospection minière par un traitement fiscal favorable du financement au moyen d'actions accréditives, ont produit un emballement de la prospection à la fin des années 1980. Une grande partie des travaux de prospection étaient alors consacrés à la recherche de métaux précieux. Simultanément, les cadres supérieurs de l'industrie minière exprimaient leur inquiétude au sujet de l'état des réserves canadiennes de métaux communs. Ils se demandaient, en effet, si ces réserves étaient suffisantes pour soutenir les futures opérations d'extraction des minerais et d'affinage des métaux au Canada.

Le Secteur de la politique minière de EMR a effectué des études approfondies au sujet des découvertes minières au Canada et il a publié de nombreux résultats obtenus au cours des études. Les travaux de M. Donald Cranston on été remarquables à cet égard.

De plus, le Centre d'étude des ressources faisant partie de l'Université Queen à Toronto a publié des documents utiles décrivant l'ampleur et la signification des réserves minières découvertes au Canada. Les études faites dans ce domaine par le professeur Brian Mackenzie et ses associés sont notables et elles se poursuivent.

Cependant, il faut encore recueillir des informations factuelles et faire des analyses afin de former une base permettant au gouvernement fédéral et aux gouvernements provinciaux de concevoir des stratégies pour influencer ou ne pas influencer dans l'avenir le niveau de la prospection des métaux communs au Canada. L'étude à faire dans ce contexte doit répondre à l'importante question suivante :

> Est-ce que la prospection minière courante est suffisante pour soutenir la contribution que le Canada devra fournir dans l'avenir aux réserves mondiales de métaux communs?

Il reste à savoir comment le critère du «maintien de la contribution actuelle du Canada» aux réserves de métaux communs s'applique aux politiques de n'importe quel gouvernement en matière d'impôt, de stimulant et de développement économique. Cependant, la fourniture d'informations factuelles plus définitives pour répondre à la question posée ci-dessus devrait améliorer la qualité et l'à-propos des décisions prises dans ce domaine de la politique gouvernementale.

L'APPC et l'AMC recherchent actuellement des options pour commander une enquête sur la question de la suffisance de la prospection pour soutenir le niveau actuel (ou un niveau supérieur ou inférieur) des réserves de métaux communs. Les deux associations croient qu'il est dans l'intérêt général des gouvernements et de l'industrie minière d'avoir des faits plus définitifs pouvant les aider à développer des stratégies pour influencer les futures niveaux de prospection minière dans les différentes juridictions et au Canada dans son ensemble.

Recommandation

11. Il est recommandé que l'industrie minière et EMR travaillent de concert pour améliorer le fonds des informations factuelles mettant en relation les récents taux de prospection et l'objectif voulant que soit maintenu le niveau actuel des réserves de métaux communs au Canada.

Levés et cartes géologiques

Le développement minier va également bénéficier de levés et de cartes géologiques de haute qualité provenant de toutes les régions du Canada. Dans certaines juridictions comme les Territoires du Nord-Ouest de plus grands efforts sont souhaitables pour améliorer la connaissance de base du potentiel minier. Un certain nombre de bandes amérindiennes ont demandé avec insistance qu'un programme plus intensif soit mis en oeuvre pour connaître le potentiel minier des terres incluses dans les réserves amérindiennes.

Les activités de la Direction des levés géologiques du Canada et les programmes complémentaires des provinces et des territoires facilitent l'obtention d'une partie de l'infrastructure nécessaire à la prospection et à l'exploitation minières au Canada. L'industrie minière aimerait qu'il y ait davantage d'activités topographiques et cartographiques dans certaines régions et dans certains cas. Il est important que ces activités aient lieu dans toutes les régions.

Dans les Territoires du Nord-Ouest, qui sont de juridiction fédérale, l'industrie minière est préoccupée par le fait que les dépenses engagées pour la préparation de cartes géologiques ont été substantiellement réduites. Au cours des dix dernières années, les dépenses faites par la Direction des levés géologiques du Canada ont été réduite de 46 %, soit une baisse de 6 millions de $, tandis que les années-personne ont chuté de 41 %. En sept ans seulement les dépenses faites par la Division de géologie du ministère des Affaires indiennes et du Développement nordique ont chuté de 20 % et les années-personne de 17 %. De plus, le projet de plan stratégique de la Direction des levés géologiques du Canada laisse entrevoir que l'on portera plus d'attention au Sud qu'au Nord. Bien que le financement obtenu en vertu des accords de développement minier soit apprécié, la productivité est entravée lorsque le financement établi selon la «Base A» est réduit en conséquence.

Le secteur privé doit également accroître ses activités pour faire progresser la capacité de prospection de l'industrie minière. Les membres du Comité exécutif de l'Association minière du Canada ont fait savoir qu'ils considéraient les travaux de R&D s'appliquant à la technologie de la prospection comme l'une des questions les plus importantes. Le Conseil

technologique de l'industrie minière du Canada procède actuellement à l'examen de cette question.

Chapitre 11

DÉVELOPPEMENT DES SABLES BITUMINEUX

Base de la ressource et tendances de la production

Bien que la plupart des questions et des opportunités décrites dans le présent rapport couvrent tous les secteurs de l'industrie minière du Canada et toutes les méthodes employées pour extraire les minerais, l'Association minière du Canada (AMC) désire attirer l'attention des lecteurs, dans le présent chapitre, sur les opportunités qu'offre un secteur particulier, à savoir le développement des sables bitumineux.

La production, en 1990, d'huile lourde extraite des sables bitumineux de l'Alberta s'est élevée à 12 032 500 m^3, ce qui représente 12,5 % de la production totale de pétrole brut et de produits équivalents. Cette quantité d'huile lourde extraite des sables bitumineux a été évaluée à 2 068 millions de $ ce qui correspond à 13,8 % de la valeur de la production totale de pétrole brut au Canada en 1990. (MAC, Mining in Canada : Facts & Figures 1991, Table 20, p. 47).

L'importance des sables bitumineux ne réside pas seulement dans le fait que leur rendement annuel excède 2 milliards de $. Leur importance est majorée parce que l'on prévoit le déclin de la production canadienne à partir des réserves classiques de pétrole.

Les vastes étendues de sable bitumineux et les ressources en huile lourde disponibles en Alberta constituent une importante solution de rechange par suite du déclin des réserves classiques de pétrole qui ont pourtant été la force motrice d'une industrie énergétique vitale dans l'Ouest du Canada. Les réserves totales de l'Alberta, en ce qui concerne le pétrole brut classique, le gaz naturel, l'huile lourde et les sables bitumineux, constituant plus de 90 % du total canadien dans ces catégories de produits. L'huile lourde et les sables bitumineux forment plus de 60 % du total albertain des réserves récupérables qui restent à exploiter. Le plus récent rapport de ERCB (Alberta Energy Resource Conservation Board) estime que le volume initial sur place du bitume brut atteint 266,5 milliards de m^3 (1 676,82 milliards de barils) dans la catégorie extractible in situ et dans la catégorie récupérable en surface. Ces réserves massives de bitume brut sont contenues dans du sable et dans des formations sédimentaires de carbonate dans les étendues de sable bitumineux d'Athabasca, de Cold Lake et de Peace River.

Les prévisions courantes indiquent un déclin des réserves classiques car la production excède les nouvelles découvertes. On s'attend à ce que cette tendance se poursuive alors que les perspectives de nouvelles découvertes sont de plus en plus limitées. Au cours des deux dernières années le déclin de la production du brut léger a été plus sévère que prévu.

En 1989, la production de brut léger en Alberta a été inférieure d'environ 6 % à la production prévu (126 000 m^3 par jour au lieu des 134 000 m^3 prévus). En 1990, la production du brut léger a décliné plus qu'en 1989. Son déclin a été de 8 % (116 000 m^3 par jour au lieu des 126 000 m^3 de 1989). La prévision mise à jour de la Commission albertaine ERCB en ce qui concerne le brut léger est que sa production va graduellement décroître. Elle devait tomber à

103 000 m^3 par jour en 1991 et elle devrait décliner de plus en plus rapidement dans les années 1990 pour s'effondrer au niveau de 66 000 m^3 par jour en 2004.

Aujourd'hui, 90 % des besoins mondiaux en produits pétroliers sont satisfaits par du pétrole brut classique bien que ce pétrole constitue moins de 42 % des ressources pétrolières du monde.

Les sables bitumineux à la rescousse des réserves classiques déclinantes

Le déclin des réserves classiques peut être compensé par le développement ordonné des sables bitumineux et des ressources en huile lourde. La production du brut classique qui décline en Alberta pourrait être compensée par l'amélioration du bitume et de l'huile lourde pour obtenir un brut de bonne qualité appelé SCO et des carburants de transport pouvant être vendus. L'application réussie d'une telle stratégie pourrait non seulement permettre au Canada de garder son autonomie énergétique mais aussi elle améliorerait la qualité globale des matières premières des raffineries et donnerait la possibilité d'exporter aux États-Unis le SCO de bonne qualité et les carburants de transport.

Les moyens techniques, les réserves prouvées et les risques financiers liés au développement des sables bitumineux sont des facteurs modestes comparés à ceux qui s'appliquent aux autres nouvelles sources de pétrole au Canada. Le mégaprojet des sables bitumineux est en bonne voie. Aucune période de développement à long terme n'est requise. La technologie a déjà fait ses preuves, donc la production peut reprendre sans tarder.

L'AMC est d'avis que la production pétrolière des sables bitumineux sera nécessaire pour répondre aux futurs besoins des Canadiens. Étant donné l'estimation courante des prix du pétrole dans l'avenir, le pétrole provenant des sables bitumineux sera compétitif avec le pétrole importé. Le Canada bénéficiera également d'une activité économique accrue durant une période où la main-d'oeuvre et les installations manufacturières sont sous-utilisées. Les recettes fiscales augmenteront (au moins grâce aux nombreux travailleurs), la balance commerciale s'améliorera et le pays aura un approvisionnement pétrolier très fiable.

Initiative d'un développement conjoint

L'industrie minière, l'industrie pétrolière, le gouvernement fédéral et les gouvernements provinciaux devraient faire tout leur possible pour convaincre les pays importateurs de pétrole notamment les États-Unis, qu'ils auraient intérêt à investir dans le développement des sables bitumineux qui forment une source d'approvisionnement fiable à long terme. La production accrue du pétrole extrait des sables bitumineux ne pourrait constituer qu'un modeste apport pour réduire la dépendance de l'Amérique du Nord à l'égard des approvisionnements du Moyen-Orient. Cependant, à moyen terme, l'exploitation des sables bitumineux enverra un signal significatif au Moyen-Orient et aux pays producteurs de pétrole qui apprendront ainsi que les États-Unis et le Canada cherchent activement des solutions de rechange sur leurs territoires respectifs pour avoir des approvisionnements énergétiques stables et fiables.

L'AMC propose donc une stratégie pour l'exploitation des sables bitumineux. Cette stratégie permettrait d'employer une nouvelle technologie basée sur les immenses réserves de gaz naturel de l'Alberta pour traiter l'huile lourde afin d'en faire un produit d'une qualité nettement supérieure à celle des pétroles raffinés selon l'ancienne technologie. Par ailleurs le nouveau produit sera plus clément pour l'environnement que les produits employés aujourd'hui. Enfin, le nouveau produit sera facile à vendre et à exporter et il répondra aux normes de l'avenir.

Voici les principaux avantages que le Canada obtiendra lorsque les sables bitumineux seront exploités de façon ordonnée :

* croissance économique;

* création d'un grand nombre d'emplois;

* développement additionnel de fabrications induites;

* accroissement des possibilités d'exportation;

* carburants plus cléments pour l'environnement que ceux employés aujourd'hui;

* sécurité de l'approvisionnement.

Recommandation

12. **Il est recommandé qu'un comité d'étude conjoint formé de représentants des gouvernements et des industries prépare une stratégie pour l'exploitation des sables bitumineux afin de compenser le déclin prévu des réserves de pétrole classique au Canada tout en engendrant des avantages socio-économiques et environnementaux de bon aloi.**

Chapitre 12

CADRE DES POLITIQUES GOUVERNEMENTALES

Cadre fiscal et monétaire

Un important facteur permettant de déterminer l'ampleur des opérations de l'industrie minière au Canada est le cadre des politiques gouvernementales. Ce cadre a des effets sur la rentabilité actuelle des opérations et, compte tenu des prévisions relatives à l'orientation future des politiques gouvernementales, il influence l'importance et la localisation des investissements destinés aux projets de développement des ressources minières du Canada.

Voici les principaux facteurs considérés dans le cadre des politiques gouvernementales :

- **Taux de change du dollar canadien**

  Lorsque le dollar canadien est constamment fort, le coût de la machinerie et des matériaux achetés à l'étranger est réduit. Cependant, le dollar fort ne favorise pas les producteurs canadiens qui exportent des produits miniers. Si la valeur du dollar canadien augmente d'un cent, l'impact sur les bénéfices d'une seule entreprise peut excéder 10 millions de $ par an et la perte peut atteindre 200 millions de $ pour l'ensemble du secteur et cette estimation est plutôt modeste.

- **Taux d'intérêt**

  Au Canada, les taux d'intérêt sont nettement plus élevés que ceux en vigueur aux États-Unis. C'est pourquoi le coût des emprunts et des investissements a augmenté au Canada.

- **Coût de la main-d'oeuvre**

  Les taux de salaire, au Canada, sont nettement plus élevés que les taux en vigueur aux États-Unis. Cet important facteur rend l'industrie canadienne peu compétitive et incite les entreprises à s'en aller ou à investir dans d'autres pays. Les sociétés minières, qui ont toujours payé leur personnel à des taux supérieurs à la moyenne industrielle, sont sérieusement atteintes.

- **Fiscalité**

  Les niveaux des impôts au Canada qui excèdent les niveaux des impôts d'autres pays et notablement ceux des États-Unis, incitent les entreprises à restreindre leurs activités au Canada et à développer leurs opérations à l'étranger.

- **Motivations et aide fournie aux sociétés minières**

  Les sociétés minières prennent leurs décisions relatives aux investissements sur une base commerciale en examinant les perspectives d'avenir en matière de rendement. La disponibilité d'un dégrèvement d'impôt, de subventions, de garanties d'emprunt ou d'autres formes d'aide monétaire provenant du gouvernement, influe sur le calcul des futurs coûts, des revenus et du rendement d'un projet minier. Bien que le gouvernement fédéral ait des raisons compréhensibles et louables de supprimer un bon nombre de ces avantages, il est probable que l'effet global de ce changement sera un certain ralentissement des investissements miniers au Canada ou une réorientation de ces investissements (par exemple, moins de prospection en surface par suite de la suppression des incitations fiscales et subventionnelles pour le financement par actions accréditives).

- **Infrastructure**

  Les investissements dans les nouveaux projets de développement minier peuvent être accrus par les coûts relatifs aux routes, aux installations électriques et à d'autres éléments de l'infrastructure, si ces coûts sont inclus dans le devis du projet. Dans les sites miniers très éloignés comme ceux du Yukon et des Territoires du Nord-Ouest, l'endossement par les gouvernements d'au moins une partie des coûts de l'infrastructure peut être un facteur décisif pour choisir les projets à mettre en marche et quand.

Le ministère fédéral des Finances de concert avec la Banque du Canada a adopté un ensemble de politiques qui imposeront à l'industrie, aux syndicats et aux consommateurs canadiens une discipline relative aux coûts et aux prix. Le gouvernement fédéral est prêt à lutter contre l'inflation si la valeur du dollar canadien baisse sur le marché du change et si les importations deviennent plus coûteuses. Le gouvernement restreint actuellement l'augmentation du taux des salaires dans la fonction publique fédérale. Au moyen de la taxe sur les produits et services (TPS) le gouvernement cherche à réduire la dette nationale. Cet ensemble de politiques devrait, avec le temps, avoir un effet favorable sur la compétitivité du Canada.

Comme l'industrie minière exporte ses produits, elle aurait préféré que le gouvernement fédéral ait eu recours à une stratégie différente au cours des sept dernières années. Dans une série de mémoires présentés au ministre des Finances avant le budget, l'AMC a fait un plaidoyer en faveur d'une réduction radicale des dépenses gouvernementales et du déficit comme fondation

souhaitable pour la politique fiscale et monétaire. Si une réduction radicale du déficit et de la dette nationale avait eu lieu plus tôt, nous pourrions maintenant avoir un niveau fiscal et des taux d'intérêt réduits et probablement un dollar canadien un peu dévalué.

Bien qu'il ne soit pas possible, dans le présent rapport, de faire des commentaires sur la conduite de tous les gouvernements provinciaux et territoriaux, il est à noter que les politiques fiscales du gouvernement de l'Ontario sont inquiétantes. L'accroissement des dépenses, des salaires et des déficits va à l'encontre des politiques macroéconomiques que l'AMC préconise.

Recommandation

13. **Il est recommandé que le gouvernement fédéral développe et que les gouvernements provinciaux supportent un ensemble de politiques fiscales et monétaires destinées à réduire les déficits et les dettes gouvernementales, à restreindre les augmentations disproportionnées des prix, des impôts et des salaires par rapport aux barèmes des concurrents industriels du Canada et à améliorer la compétitivité générale de l'industrie canadienne.**

Politiques fiscales spécifiques

Bien qu'il soit nécessaire de souligner l'importance d'une orientation appropriée pour les politiques fiscales et monétaires d'application générale, il est à noter que des politiques fiscales spécifiques occupent souvent une place importante dans les stratégies de développement économique.

En tant que taxe sur la consommation, la TPS permet d'avoir des crédits d'impôt sur intrants. Cependant, le gouvernement fédéral n'a pas accepté de remplacer la taxe d'accise par la TPS à cause de la perte de revenu qui en aurait résulté. Avant la fin de l'année 1990, l'industrie minière a obtenu un rabais de 3 cents par litre sur la taxe d'accise appliquée au carburant. Lorsque le rabais a pris fin, la taxe d'accise n'a pas été remplacée par la TPS. Appliquée de plein fouet, la taxe d'accise augmente le coût du carburant et elle préoccupe beaucoup les sociétés minières effectuant des opérations à ciel ouvert, particulièrement pour extraire du charbon. La taxe d'accise et d'autres impôts indirects s'appliquant aux frais de production doivent être absorbés par le producteur canadien. Les sociétés minières canadiennes acceptent les prix proposés sur les marchés mondiaux, donc elles ne peuvent pas faire payer ces taxes aux clients.

Recommandation

14. **Il est recommandé que les gouvernements qui conçoivent des traitements fiscaux pouvant stimuler la compétitivité de l'industrie minière canadienne tiennent compte de l'effet des impôts indirects sur les intrants de la production. Le montant de ces impôts ne peut pas être facturé aux clients sur les marchés mondiaux.**

Vente de l'or provenant des réserves officielles du Canada

Une autre forme de conduite gouvernementale qui semble aller à l'encontre de la politique générale visant à stimuler la compétitivité canadienne est la vente continuelle de grandes quantités d'or provenant des réserves officielles du Canada.

En dépit des démarches effectuées par l'AMC, le gouvernement fédéral continue de vendre l'or des réserves officielles. C'est en 1980 que le programme de vente d'or a été établi. Cette année-là le pourcentage occupé de la capacité des réserves atteignait 80 % alors qu'à la fin de 1990 il n'était plus que de 24 %. De plus, les ventes d'or du gouvernement canadien représentaient en 1990 plus de 60 % de l'or sur le marché provenant de sources officielles. Les producteurs d'or du Canada sont préoccupés pour les raisons suivantes :

- Ces ventes d'or sont en contradiction avec les efforts faits par la Monnaie royale canadienne et l'industrie minière pour accroître la demande de l'or nouvellement extrait des mines canadiennes.

- Il s'agit d'un exemple fâcheux et c'est un précédent pouvant inciter d'autres juridictions à vendre beaucoup d'or, ce qui pourrait déprimer sérieusement le marché mondial de l'or.

Le Canada est le seul pays producteur d'or qui vend ses réserves d'or en concurrence directe avec l'industrie minière canadienne. L'ampleur des ventes d'or du gouvernement, depuis 1986, est énorme si on la compare à la production totale canadienne.

Les ventes gouvernementales sont tellement considérables qu'elles font obstacle aux efforts faits au Canada pour accroître la demande de l'or, en particulier la pièce en or dite Feuille d'érable et les bijoux en or qui peuvent se vendre en France. Le gouvernement fédéral n'a nullement indiqué qu'il mettrait fin à son programme de vente d'or ou qu'il ralentirait ses ventes, mais il soutient qu'il a besoin du revenu que l'or procure.

Recommandation

15. **Il est recommandé que les ministres des Mines demandent au ministère fédéral des Finances de réexaminer sa politique de vente de l'or des réserves officielles afin que cette vente soit arrêtée prochainement ou limitée dans l'avenir ou afin que soit adoptée une approche qui ne compromette pas la demande de l'or nouvellement extrait des mines canadiennes.**

L'infrastructure et l'ensemble des politiques : l'exemple du Yukon

Le rôle que le gouvernement joue en fournissant une infrastructure à l'industrie minière est l'un des éléments importants d'une stratégie de développement à long terme. Cependant,

l'infrastructure seule ne suffit pas. L'ensemble complet des politiques doit constituer une stratégie logique et exécutable pour le développement.

Lors de la Conférence 1991 des ministres des Mines, tenue à Whitehorse (Yukon) le 23 mai, M.W. Doug Eaton, au nom de Archer, Cathro & Associates (1981) Limited, ingénieurs conseils en géologie à Vancouver, a présenté un mémoire au forum sur la compétitivité de l'industrie minière du Yukon. Ce mémoire contenait un certain nombre de suggestions spécifiques concernant tous les éléments appropriés d'un ensemble de politiques pour le développement de l'exploitation minière au Yukon : routes, installations électriques, revendications territoriales des Autochtones, règlements relatifs à l'environnement et permis pour l'utilisation des terres, stimulants pour le développement et pour la prospection et la publicité. La raison d'être de l'ensemble des politiques proposées a été présentée comme suit :

> «Le principal point de mire d'une stratégie à long terme doit être un programme de stimulation pour promouvoir le développement des mines plutôt que favoriser la prospection. Si l'industrie minière s'aperçoit que le Yukon est un territoire propice au développement des mines, alors la prospection sera envisagée. Cependant, il faudra peut-être attendre un certain temps avant de connaître les effet réels d'un développement stimulé. De plus, les activités de prospection sont très ralenties depuis quelques années, ce qui indique qu'un programme de stimulation à court terme est également nécessaire pour la prospection. La mise en oeuvre de stratégies de prospection et de développement doit aller de pair avec une campagne agressive pour que les investisseurs potentiels puissent connaître les programmes et pour que l'on vienne à bout des idées fausses que beaucoup de gens se font au sujet du Yukon.»

Voici les principales mesures proposées :

- le gouvernement fédéral et/ou les gouvernements des territoires devraient financer 100 % du coût des principales routes d'accès aux nouvelles mines ainsi que de 50 % à 90 % du coût des routes secondaires desservant des installations minières en voie de développement;

- les sites des centrales thermiques et/ou hydroélectriques doivent être identifiés et l'estimation du coût de la production et du transport de l'électricité sera fournie sur demande aux promoteurs de développements miniers;

- les revendications territoriales des Autochtones doivent être réglées dès que possible pour mettre fin à l'incertitude qui règne en ce qui concerne la sélection des sites miniers et l'accès aux installations minières;

- les règlements du Yukon s'appliquant à l'utilisation des terres et concernant les développements miniers ne doivent pas être plus sévères que les règlements semblables appliqués ailleurs au Canada;

- on devrait réinstaurer une période initiale exempte d'impôt qui équivaudrait à une allocation nordique pour le coût en capital;

- des subventions de nature stimulante devraient être accordées seulement lors du premier stade de la prospection, mais non aux stades du forage et des travaux souterrains;

- un programme publicitaire doit être élaboré en coopération avec le gouvernement, les sociétés minières et les entreprises de service.

Par suite du mémoire présenté à la Conférence de Whitehorse, les mérites de la proposition de Archer, Cathro & Associates sont sans doute passés en revue par le gouvernement fédéral et le gouvernement du Yukon. Si cette proposition est citée dans le présent rapport, ce n'est pas tant à cause de son contenu, mais c'est surtout parce que sa façon d'aborder le problème du développement minier régional dans son ensemble et de proposer des stratégies positives pour promouvoir ce développement présente beaucoup d'intérêt. Les décisions relatives à l'infrastructure seront améliorées si elles sont prises dans un large contexte stratégique.

Recommandation

16. **Il est recommandé que les ministres des Mines continuent d'encourager la présentation de propositions pour le développement économique et minier régional avec des apports de l'industrie minière et des entreprises de service afin que les décisions ayant trait à l'infrastructure et aux autres éléments d'un plan à long terme puissent être prises dans un large contexte stratégique.**

RECOMMANDATIONS

L'industrie minière recommande :

1. Que les ministres des Mines chargent un groupe de travail mixte, comprenant des représentants des gouvernements et de l'industrie minière, d'examiner la performance environnementale de l'industrie minière, de suggérer les domaines importants pour l'avenir et de sensibiliser davantage le public au sujet des progrès faits dans la protection de l'environnement par l'industrie minière.

2. Que le ministre fédéral de l'Énergie, des Mines et des Ressources collabore étroitement avec l'industrie minière et d'autres ministères en ce qui concerne les questions relatives aux affaires étrangères et internationales.

3. Que les ministres des Mines considèrent l'établissement d'un comité mixte comprenant des représentants des gouvernements et de l'industrie minière pour examiner la duplication des règlements du gouvernement fédéral et des gouvernements provinciaux et territoriaux ainsi que les procédures d'évaluation employées dans les domaines de l'environnement et de la santé, dans la mesure où ces procédures ont des répercussions dans l'industrie minière, l'objectif étant d'obtenir une meilleure complémentarité dans les diverses réglementations.

4. Que les ministres des Mines soumettent de nouveau au ministre des Finances leurs recommandations relatives à la déductibilité, aux fins de l'impôt sur le revenu, des dépenses engagées pour la récupération de sites miniers, ces dépenses étant couvertes par un fonds mandaté par un gouvernement et que les ministres des Mines cherchent à obtenir rapidement des réponses à leurs questions.

5. Que les ministres des Mines s'assurent que des principes valides sous-tendront les lois et les règlements qui obligeront les sociétés minières à fournir une garantie financière pour la récupération des sites (y compris toutes les exigences en matière de récupération, de mise hors service et d'obligations environnementales après la fermeture). Voici les principaux principes recommandés :

   * Toute proposition de projet minier ne devrait pas être réalisée si le financement de la récupération éventuelle du site ne pouvait pas être garanti.

   * Chaque propriétaire de mine (y compris, le cas échéant, un entrepreneur associé) doit assumer la responsabilité des frais de récupération liés à ses opérations et il devra éventuellement payer la note de la remise en état des lieux.

   * Il ne devrait pas y avoir de fonds spécial à la grandeur de l'industrie minière pour couvrir tous les frais de récupération des sites miniers.

   * Si un fonds en fiducie était mandaté par un gouvernement, il faudrait que ce fonds soit géré par une société minière intéressée. Un tiers indépendant,

comme par exemple une société fiduciaire, pourrait convenir pour gérer le fonds.

* Une période appropriée d'adaptation progressive aux nouveaux règlements est nécessaire pour permettre aux sociétés minières de se préparer à les appliquer.

* Le plan approuvé de mise hors service doit être basé sur les normes en vigueur au moment de l'approbation.

* Les gouvernements devraient accepter l'extinction des obligations environnementales d'un propriétaire de mine lorsque les objectifs du plan de mise hors service de la mine ont été atteints. Il est important d'avoir une procédure claire pour que la garantie financière puisse entrer en jeu lorsque le travail de récupération est en cours et lorsqu'il prend fin.

* On ne doit pas demander aux mines en exploitation de supporter les frais de récupération de sites miniers abandonnés depuis longtemps par des propriétaires inconnus.

* Les sociétés minières ayant plusieurs succursales devraient pouvoir établir un pool de garantie financière pour couvrir éventuellement les frais de récupération des sites de toutes les succursales.

* De plus, en définissant la garantie financière «raisonnable», le gouvernement devrait permettre aux sociétés minières d'avoir recours à un crédit documentaire irrévocable, à une obligation de bonne exécution, déductible du revenu imposable, à un fonds de fiducie mandaté par un gouvernement ou à d'autres formes ou combinaisons de garantie pouvant être acceptés, dans les circonstances actuelles, par le gouvernement concerné.

* Finalement, la législation devrait prévoir des dispositions appropriées pour obtenir l'aide d'ingénieurs ou de professionnels indépendants afin d'avoir des conseils, des moyens d'assouplissement, des services de médiation et/ou d'arbitrage pour régler les différends pouvant survenir lors du choix d'un arrangement financier et lors de l'établissement ou durant la gestion d'un fonds.

Voir document d'étude, pp. 6-7, 9)

6. Que les ministères des Mines fournissent aux autres ministères du gouvernement fédéral et des gouvernements provinciaux et territoriaux les excellentes connaissances qu'ils ont dans de nombreux domaines miniers. Des programmes de sensibilisation devraient être établis dans les ministères des Mines pour susciter chez les décideurs gouvernementaux et dans le grand public une meilleure compréhension de l'importance du rôle de l'industrie minière dans l'économie et dans la société.

7. Que le gouvernement fédéral et les gouvernements provinciaux et territoriaux continuent de fournir des informations pour la base de données NATLUS concernant

l'utilisation des terres. Étant donné que la politique du Comité CIMAT prévoit une grande diffusion des informations collectées dans NATLUS, les organismes contribuant à cette base de données sont priés de fournir des séries d'informations appropriées dans des conditions qui n'entraveront ni l'utilisation du logiciel ni la grande diffusion des données.

8. Que le ministère fédéral de l'Énergie, des Mines et des Ressources participe activement au processus de sélection des terres destinées aux nouveaux parcs et obtienne suffisamment de fonds pour que la Direction des levés géologiques puisse effectuer la meilleure évaluation possible du potentiel des ressources minières à un stade précoce du processus de sélection des terres pour chacun des nouveaux parcs.

9. Que les ministres des Mines s'efforcent par leurs bons offices d'obtenir rapidement un règlement satisfaisant pour mettre fin aux revendications territoriales des Autochtones dans le Nord et en Colombie-Britannique.

10. Que les ministres des Mines donnent un haut rang de priorité aux travaux du groupe de travail intergouvernemental sur la participation des Autochtones aux opérations minières et exhortent l'industrie minière à faire sa part dans ce domaine.

11. Que l'industrie minière et EMR travaillent de concert pour améliorer le fonds des informations factuelles mettant en relation les récents taux de prospection et l'objectif voulant que soit maintenu le niveau actuel des réserves de métaux communs au Canada.

12. Qu'un comité d'étude formé de représentants des gouvernements et des industries prépare une stratégie pour l'exploitation des sables bitumineux afin de compenser le déclin prévu des réserves de pétrole classique au Canada tout en engendrant des avantages socio-économiques et environnementaux de bon aloi.

13. Que le gouvernement fédéral développe et que les gouvernements provinciaux supportent un ensemble de politiques fiscales et monétaires destinées à réduire les déficits et les dettes gouvernementales, à restreindre les augmentations disproportionnées des prix, des impôts et des salaires par rapport aux barèmes des concurrents industriels du Canada et à améliorer la compétitivité générale de l'industrie canadienne.

14. Que les gouvernements qui conçoivent des traitements fiscaux pouvant stimuler la compétitivité de l'industrie minière canadienne, tiennent compte de l'effet des impôts indirects sur les intrants de la production. Le montant de ces impôts ne peut pas être facturé aux clients sur les marchés mondiaux.

15. Que les ministres des Mines demandent au ministère fédéral des Finances de réexaminer sa politique de vente de l'or des réserves officielles afin que cette vente soit arrêtée prochainement ou limitée dans l'avenir ou afin que soit adoptée une approche qui ne compromette pas la demande de l'or nouvellement extrait des mines canadiennes.

16. Que les ministres des Mines continuent d'encourager la présentation de propositions pour le développement économique et minier régional avec des apports de l'industrie minière et des entreprises de service afin que les décisions ayant trait à l'infrastructure et aux autres éléments d'un plan à long terme puissent être prises dans un large contexte stratégique.

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48TH ANNUAL MINES MINISTERS' CONFERENCE

Financial Assurance for Mine Reclamation, Decommissioning and Post-Closure Obligations

The Mining Association of Canada

HALIFAX, Nova Scotia
September 22-24, 1991

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The Mining Association of Canada
L'Association minière du Canada

Financial Assurance for Mine Reclamation, Decommissioning and Post-Closure Obligations

A Discussion Paper

prepared by

The Mining Association of Canada
in consultation with
the provincial and territorial mining
associations and the Coal Association of Canada

April 1991

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Contents

		Page
A.	Introduction	1
	. The Mining Company's Reclamation Obligation	1
B.	Government Requirements for Mine Reclamation	2
C.	The Mining Industry Response	5
D.	Basic Principles for Legislation	6
E.	The Concept of "Reasonable" Financial Assurance	7
F.	Conclusions	8

Appendices

A.	Irrevocable Letter of Credit	10
B.	Performance Bond	12
C.	Trust Fund	13
D.	Insurance	17

April 1991

Financial Assurance for Mine Reclamation, Decommissioning and Post-Closure Obligations

The Mining Industry Policy

A. Introduction

The Mining Company's Reclamation Obligation

The Canadian minerals industry of the 1990s is keenly aware of its responsibilities for stewardship of the environment with respect to all operations from the exploration phase through the development and operation of mines to the operation of refineries and smelters.

With regard to mines, a mining company has a legal obligation, which varies according to the jurisdiction in which the mine is located, to pre-plan the technical work of reclamation, decommissioning and environmental protection following mine closure and to provide financial assurance that the work will be carried out to an acceptable standard.

Reclamation of a mine site generally involves the dismantling of buildings and structures and the stabilization of mine waste dumps and tailings impoundment areas. This work may begin during the operating life of the mine and it is usually completed within five to ten years of its closure. These activities represent significant but generally predictable costs for a mining company. If, however, circumstances exist that require long-term site management e.g. acid rock drainage, the company's decommissioning and post-closure obligations may extend for a much longer period. Costs are likely to be much higher and cannot be predicted with the same degree of accuracy.

Accordingly, the costs associated with mine reclamation and closure can affect the competitive position of Canadian mining companies, most of whom operate in the face of metals prices set in international markets and strong competition from minerals producers in other countries.

In the interests of a healthy mining industry, therefore, it is important that provincial and territorial legislation governing mine reclamation, while accomplishing its intended purpose, should be designed in the most cost-effective way.

The purpose of this discussion paper is to describe the mining industry's general position on the issues involved in government-mandated financial assurance for mine reclamation. The paper reflects the general views of the Canadian mining industry on the nature and forms of financial assurance that will enable mining companies to perform successfully their reclamation, decommissioning and post-closure obligations.

For any given reclamation situation, the interests of the public, of the government and of the mining company can best be served by a regulatory regime that not only protects the environment but also allows the design of a program of financial assurance that is both reasonable and adequate in form and extent as judged by individual circumstances. Such legislation would be consistent with the concept of Sustainable Development which requires the integration of environmental and economic decision making.

The paper is intended as a basis for discussion with each government in Canada that seeks a workable legislated regulatory regime to deal with these obligations within its jurisdiction.

B. Government Requirements For Mine Reclamation

An increasingly important item on the environmental agenda of provincial governments (and of the federal government with respect to Canada's northern territories) is adequate provision, both technical and financial, for mine reclamation, decommissioning and post-closure site maintenance. In different jurisdictions the requirements vary and are at different stages of policy and legislative development.

The governments of British Columbia and Alberta have had requirements for the provision of financial assurance for some time. Alberta's system, based primarily on the use of letters of credit, has served well the reclamation needs within that province. The governments of British Columbia, Ontario, Quebec and the federal government (for the North) are all in the process of introducing or amending statutes and regulations that require the owner of a mine to submit a plan for reclamation during mine operation and after mine closure and to provide financial assurance that all reclamation requirements can be carried out.

For example, Ontario's Bill 71 amending the Mining Act states that "Financial Assurance" as part of a closure plan shall be cash (fund), a letter of credit from a schedule A bank, a bond of a guarantee company or "another form of (acceptable) security".

The term "financial assurance" does not imply the use of any particular form of security provided it is adequate. Depending on its particular circumstances, a company should be free to utilize:

- irrevocable letter of credit (see Appendix A);
- performance bond (see Appendix B);
- tax-deductible government-mandated trust fund (see Appendix C);
- an insurance policy (see Appendix D);
- a parent company guarantee;
- the pledging of assets;
- the maintenance of satisfactory financial tests; and
- other forms or combinations of measures as appropriate.

The vast majority of mines have relatively straightforward reclamation problems. Buildings must be removed and openings sealed. Waste dumps and tailings areas must be stabilized. Some of this work may be done during the mine's operating life. It is usually completed within a few years after mine closure. In these circumstances, a good proportion of the reclamation costs is usually met from the salvage value of buildings and equipment. The remainder does not represent a large burden to the mining company, which can meet government bonding requirements and site reclamation standards.

In some situations, such as acid rock drainage, ongoing and significant costs may arise from the need to manage the site for long periods of time. Where the company does not have continuing sources of income to meet these costs, the usual forms of financial assurance (bonds and letters of credit) may not be suitable to cover ongoing site maintenance costs. In this case the government may mandate the use of a trust fund ("Fund").

Emergent and growing governmental requirements for private sector mine operators to provide advance plans and financial assurance for mine reclamation entail significant immediate and future costs for specific mining companies and potentially for the industry as a whole. Industry spokesmen have expressed a concern from the viewpoint of a small junior company or single mine company it may be extremely difficult to provide adequate financial assurance and, if pushed too far, this may mean that it will be impossible for juniors to develop mines.

In terms of owner liability for mine reclamation, three basic situations may be distinguished:

- new mines;
- existing mines, including non-operating mines where the property is still held by a corporation;
- abandoned mines where the rights have reverted to the province or where the corporate entity has disappeared.

Whatever form of financial assurance is chosen, the following principles should apply, namely: that the basis should be site specific, that the cost estimates should be soundly based and that the design of the arrangement should encourage responsible management of reclamation.

In the case of a new mine, the mine owner will factor into his investment decision the new government regulations for technical reclamation and restoration of a mined site and attendant costs of providing acceptable financial assurance. Operating conditions and reclamation requirements may be negotiated at the time of the environmental impact assessment and will ideally remain relatively stable thereafter. The decision whether or not to proceed will be made in the light of all these projected costs.

With an existing mine, transition measures will be needed. The main issue is the careful phasing-in by government of the implementation of new reclamation and post-closure requirements. The imposition of new requirements in mid-stream may impose unforeseen liabilities and costs and alter decisions regarding mine extensions or closure. The situation is not simply one of imposing more costly reclamation requirements. If these adversely affect the mine's ability to operate economically, early closure may result, leading to loss of jobs and possibly poorer ultimate reclamation performance. To optimize reclamation and other government objectives, detailed analysis of the situation and careful negotiation between company and government will lead to the best result.

Where new reclamation or site management requirements are applied to a non-operating mine, the government will likely look to the owner to meet these requirements. Some companies, however, may have closed mines some years ago after meeting the requirements of the day, but at this point may lack the resources to carry out further work and meet today's reclamation standards.

If the mine has been abandoned and the property rights have reverted to the province or where the corporate owner(s) is insolvent or has disappeared, the provincial government will assume the financial liability. Society at large may be expected

to accept these costs, for two reasons. First, the site may have been abandoned legally under reclamations standards current at the time. Secondly, the benefits of economic and regional development during the mine's operation flowed to society at large. The imposition of a "superfund", or the taxation of existing mines to pay for abandoned sites, should be avoided, as it would have counterproductive results.

While the mining industry is not in favour of paying the costs of reclaiming abandoned sites, it is committed to working with governments to find alternate solutions to this problem. Such initiatives will best be developed on a province-by-province, commodity-by-commodity basis.

C. The Mining Industry Response

For some time, provincial mining associations (PMAs) and The Mining Association of Canada (MAC) have followed the development of new provincial and territorial requirements for mine reclamation because of the strong financial implications for mining companies operating almost anywhere in Canada.

In view of the emergence of new government requirements, the industry has already offered its assistance to governments in various ways to ensure that regulations governing financial assurance for mine reclamation will be effective, economically sound and efficient.

Since 1987, The Mining Association of Canada (MAC) and the provincial and territorial mining associations and chambers of mines have been working with their counterparts in mines departments through the Intergovernmental Working Group on the Mineral Industry (IGWG) to develop a greater understanding of mine reclamation issues and appropriate policies for government and industry.

In 1985, cooperative research was commenced on the problem of acid rock drainage, resulting in the 1988 launching of the Mine Environmental Neutral Drainage (MEND) Program. MEND is a comprehensive program of research on acid drainage and its control. To date, over $5 million has been committed to specific projects. These costs have been shared by industry (47%) federal government (41%) and provincial governments (12%).

The MAC in 1989 took the important step of adopting the "MAC Environment Policy" as a condition of membership in the Association. Similar policies were adopted by the PMAs. As a further elaboration of its Policy, MAC in the following year published its "Guide for Environmental Practice" to assist mining companies to maintain a high standard of environmental performance and compliance.

At the 1990 annual Mines Ministers' Conference, MAC and the PMAs presented a brief entitled "Sustainable Mining: Responding to the Challenge" which enunciated long term environmental goals for the mining industry. The brief also discussed reclamation requirements and called for tax deductibility of payments into any government-mandated fund.

In May and November 1990, MAC in cooperation with the PMAs held conferences on mine reclamation for mining executives. The second conference was aimed at developing the outlines of a broad, national industry position on financial assurance for mine reclamation. This policy paper is a further step in enunciating the mining industry's general position on these issues.

D. Basic Principles for Legislation

The mining industry believes that certain basic principles should underlie legislation and regulations that require a company to provide financial assurance of mine reclamation. In what follows, the term "reclamation" denotes all requirements to reclaim, to decommission and to meet post-closure environmental obligations. Also, "company", if the context requires, may include a joint venture, partnership or individual enterprise.

Although the principles involved could be elaborated at length, they may be summarized as follows:

Viability of project — The mining industry agrees that a proposed mining project should not proceed if adequate reclamation costs cannot be provided for satisfactorily.

Owner pays — Each owner of a mine (including a joint venture partner) is responsible for and should pay for any reclamation costs associated with its operations.

Superfund — There should be no industry-wide superfund to finance all mine reclamation costs.

Phase-in of regulation — An appropriate phasing-in period for new regulations is necessary to allow mining companies to prepare for compliance.

Decommissioning Standards — The approved decommissioning plan should be based on standards current at the time of approval.

Extinguishment of environmental obligations

A government should accept the extinguishment of a mine owner's environmental obligations when the objectives of the decommissioning plan have been achieved. There should also be a clear procedure and mechanism for having the financial assurance released both as the work is being carried out and upon completion of the work.

Past abandonments

Existing mines should not be called upon to pay the costs of reclaiming mine sites abandoned in the past where there is no recourse to former owners.

Pooling projects costs

A company with more than one operation should have the option of "pooling" its reclamation costs into a single financial assurance mechanism.

E. The Concept of "Reasonable" Financial Assurance

A government may rightly expect that for new and existing mines a company will provide "reasonable assurance" of availability of financing for future reclamation costs. In determining what is "reasonable" the government should recognize that the mining company cannot provide a 100% guarantee that sufficient funds will be available to cover all reclamation costs regardless of circumstances. Cost and degree of certainty are directly related. As the level of certainty approaches 100%, the costs will rise sharply.

Since an otherwise viable project could be jeopardized by the necessity of providing a level of financial assurance sufficient for 100% certainty of covering reclamation costs, the government should accept an engineered design and realistic financial assumptions and estimates as providing "reasonable assurance" from the company of future financing of reclamation costs. "Reasonable assurance" should be interpreted in negotiations between a government and the mine developer with reference to the relevant circumstances of a particular case.

The mining industry accepts the principle of a company's providing financial assurance over an acceptable time period. Blanket requirements for immediate payments of cash to provide this assurance should be avoided. Such a requirement for immediate payment would jeopardize otherwise viable economic development.

The mining industry further believes that a company should be free to select a form of surety that is appropriate in the circumstances, including the technical reclamation situation and the financial strength of the company.

As mentioned earlier, the standard forms of surety which a company should be free to utilize include the irrevocable letter of credit (described more fully in Appendix A), the performance bond (Appendix B) and a government-mandated, tax-deductible trust fund ("Fund"). The mining industry views the "Fund" option in the same light as a pension fund which is a working model of financial assurance in the field of human resource liability. The description of a Fund in Appendix C maintains this analogy with payments into a tax-sheltered fund, managed by the contributor in accordance with broad government specifications as to acceptable types of investment, with earnings in the fund also tax-sheltered, and the funds dedicated to an accepted purpose.

Whatever option or combination of options is selected, the objective should be to ensure sufficient funds for reclamation. To this end, other forms of assurance acceptable to the particular government in the circumstances may include such options as an insurance policy (described in Appendix D), a parent company guarantee, the pledging of assets and the maintenance of satisfactory financial tests. A mining company should be able to negotiate a form or forms of surety that realizes the objective of financial assurance that is effective, economically sound and efficient.

Where it is necessary to resolve a disagreement between any of the parties regarding technical standards, cost estimates, the choice of a financial arrangement or the design and operation of a Fund, the mining industry believes that legislation should provide for independent engineering or professional advice, facilitation, mediation and/or arbitration.

The selection of the appropriate mechanism, such as the appointment of an impartial facilitating or mediating panel or a public arbitration board, is likely to depend upon experience and circumstances within the particular jurisdiction. In addition, the courts exist, as a matter of right, as a last resort to resolve disputes.

F. Conclusions

- Government requirements for mining companies to provide technical pre-planning and financial assurance for mine reclamation are increasing. The mining industry has responded through consultation and working with governments. The industry further has developed its general position for use in a company or association's discussions with particular governments.

- The industry stands ready to assist governments to develop forms of regulation governing financial assurance for mine reclamation that are effective, economically sound and efficient.

- The industry has developed a number of basic principles which it considers should underlie legislation that requires a company to provide reasonable assurance (see Section D). The company will commit to cover reclamation and monitoring costs, to an agreed standard.

- In determining what is "reasonable" financial assurance, the government should permit a company, in meeting its obligations, to use an irrevocable letter of credit, performance bond, tax-deductible, government-mandated trust fund or other forms or combinations of surety acceptable in the circumstances to the particular government.

- A government should accept the extinguishment of a mine owner's environmental obligations once the objectives of the decommissioning plan are met.

- Legislation should provide an appropriate mechanism for independent engineering or professional advice facilitation, mediation and/or arbitration to resolve disputes over the choice of a financial arrangement or the design and operation of a Fund.

APPENDIX A

IRREVOCABLE LETTER OF CREDIT

Description: An irrevocable letter of credit is an agreement between a banking institution and a company whereby the bank will provide cash funds to a third party i.e. the beneficiary, which in this case would be the government, under specific terms contained in the letter of credit.

Since the letter of credit is irrevocable, the issuing bank must honour all legitimate claims i.e. those in compliance with the terms of the letter of credit presented by the beneficiary.

In addition, any changes to the terms of the letter of credit must be agreed to by all parties to the transaction. The normal term for a letter of credit is one year, although under certain circumstances the terms may be longer.

Operation: Since reclamation funding is a long-term commitment, the normal practice is to issue a letter of credit in the amount of the fund, with a one year term which is then automatically extended each year, based on an annual financial review of the company by the bank which is usually completed sixty days prior to the current expiry date. Should the bank decide not to extend the letter of credit then the equivalent of a default situation has occurred and the beneficiary is notified and has the option of drawing down the full value of the letter of credit.

Characteristics: The characteristics, i.e. the content of the letter of credit, will reflect the terms and conditions of the agreement between a company and the government with respect to a specific decommissioning plan. It will also outline the specific conditions under which funds may be drawn down by the beneficiary. These may include, for example, failure to perform certain work as outlined in the decommissioning plan, failure to meet certain quality standards or failure to extend the term of the letter of credit.

Advantages: The initial cost is inexpensive. Fees are generally negotiable and are a function of the credit-worthiness of the company. In most cases, the cost would be less than 1% per annum of the face value, i.e. the size of the required fund, for a good credit risk. However, letters of credit will be backed by an indemnity or a guarantee from the company and in this respect the company will bear a further cost.

The costs associated with opening a letter of credit are expenses as a tax deductible item.

Once in place, only a minimal amount of administration is required.

Disadvantages: The availability of a letter of credit may be restricted by a company's credit rating. Under these circumstances, a company may be required to place the full face value of the letter of credit on deposit with the bank to ensure that funds are available if drawn by the beneficiary.

A letter of credit could not be obtained by a single-mine company closing down its operations unless:

i) it was a subsidiary of a parent company, in which case the parent company could give a guarantee; or
ii) the company places the full face value of the letter of credit on deposit with the bank.

APPENDIX B

PERFORMANCE BOND

Description: Although a performance bond may be a special form of a letter of credit, thereby exhibiting all of the attributes of a letter of credit, it is most often found in the form of a surety bond issued by an insurance company. Under the performance bond agreement, the insurer agrees to act as surety for the company and makes a commitment to be financially responsible for all claims and expenses arising out of the decommissioning plan up to a certain limit. The government is the beneficiary under the bond and any changes to the bond would have to be agreed to by all three parties to the transaction.

Operation: The operation of a performance bond is similar to that of a letter of credit. The performance bond is issued for a specific time period in the face amount of the cost of carrying out the reclamation work under the decommissioning plan and is renewed for a further time period based on a credit review of the company. If the performance bond is not renewed, then the government has the option of drawing the full amount.

Characteristics: The characteristics are similar to those of a letter of credit.

Advantages: The initial cost of getting a performance bond is relatively inexpensive, although performance bonds are generally more expensive than letters of credit.

The costs associated with putting a performance bond in place are expenses as a tax deductible item.

Once the performance bond is set up, only a minimal amount of administration is required.

Disadvantages: The availability of a performance bond may be restricted by a company's credit rating. Under these circumstances, a company may be required to place the full face value of the performance bond on deposit with the insurance company to ensure that funds are available if drawn by the beneficiary.

A performance bond could not be obtained by a single mine company, closing down its operations, unless:

i) it was subsidiary of a parent company, in which case the parent company could give a guarantee; or

ii) the company places the full face value of the performance bond on deposit with the insurance company.

APPENDIX C

TRUST FUND

Description: A trust fund is a fund set up by a company in an amount that is determined to be sufficient to cover specific reclamation costs which are contained in the decommissioning plan. The fund amount will be a function of the expected annual reclamation costs, investment policy and expected real rates of return.

Operation: The fund would operate in a manner similar to a pension fund, i.e. it should be under the control of a third party trustee and have an investment manager who would be responsible for managing the funds in accordance with a defined investment policy. Contributions to the fund would normally be structured as a series of payments over a specific time period. Withdrawals could only be made from the fund to cover reclamation costs outlined in the decommissioning plan. The operation of the fund would be subject to a periodic audit review. Upon periodic review or satisfactory completion of the decommissioning plan, any surplus funds remaining would be returned to the company.

Characteristics: The fund must be structured in such a way as to give the government "reasonable assurance" that sufficient funds will be available to meet expected reclamation costs. The fund will also be set up to cover reclamation costs relating to one specific operation, although companies with more than one mine may wish to "pool" the cash funds required for individual operations into a single cash trust fund. The specific terms and conditions governing the operation of the fund will be contained in a trust agreement administered by the trustee. It is essential that income earned by the fund be tax sheltered until it is withdrawn.

The mining industry considers that a government-approved decommissioning plan should be the basis for setting up a tax-deductible government-mandated mine reclamation fund ("Fund").

Advantages: The company does not give up total control over its funds, since any surpluses created in the fund either through over-contributions or exceptional earnings should be returned to the company either after one of the periodic reviews or after the successful completion of the decommissioning plan. In addition, the company will have the incentive to ensure sound management of the fund.

If the changes proposed by the mining industry and provincial governments are made to the Income Tax Act, contributions to the fund will be tax deductible.

Both the government and the public may feel more confident that funds will be available to meet expected reclamation costs, since cash trust funds are more visible and often better understood than other alternatives.

Disadvantages: In view of the long time frames involved, greater uncertainty exists about the values assigned to the parameters that will determine the size of the cash fund, even though the same problems must be dealt with for each of the other funding mechanisms.

If large amounts of cash are required to establish a fund, a transition period will be necessary to allow time for the company to build up the financial assurance required.

Criteria for the Efficient Use of Capital, Investment Policy and Control of Fund

It is desirable that a Fund should be structured, managed and operated in a manner that is fair both to the mining company and the government. Accordingly, the mining industry suggests that the following principles should govern the design and operation of a Fund:

Site specific basis for Fund	Each mine should be assessed individually and the security required should reflect the costs and risks associated with reclaiming that site.
Basis for cost estimates	Estimated costs should be based on careful engineering and technical studies accompanied by formal risk assessments to take into account the probabilities and consequences of alternative scenarios.
Responsible management of reclamation	The design of the fund should encourage mining companies to manage their reclamation programs in an active and responsible manner, in order to control costs and to develop innovative technical solutions to reclamation challenges.
Similarity to pension fund	The principles for setting up a Fund should be similar to those used to establish a pension fund.
Investment Policy	Investment policy should permit investments that optimize the risk-return ratio, bearing in mind that the Fund is a long-term investment.

Investment Manager	The Fund should be managed by an investment manager selected by the company. The company should at the same time have the option of managing the Fund internally with reasonable guidelines, as with a pension fund.
Monitoring legislation	Legislation modelled on pension statutes or other similar legislation can be used to monitor performance of the Fund and to ensure compliance with investment policy.
Choice of financing mechanism	As justified by the circumstances, a company should have the option to determine which government-authorized financing mechanism (or combination of mechanisms) represents efficient use of the company's capital.
Expenses deductible for tax	Where a government-mandated mine reclamation fund ("Fund") is required, payments into the Fund should be allowed as a deductible expense at the time they are made for purposes of income tax and mining taxes.
Fund income sheltered from tax	Income generated by a Fund should be tax-sheltered until withdrawn.
Investment management fees	All investment management costs should be financed from the proceeds of the Fund.
Fund Trustee	An independent third party, such as a trust company, is an acceptable trustee of a Fund.
Sole government control	The mining industry is opposed to the government having sole control over the management of investments in a Fund.

<u>Review of and Audit Process for a Fund</u>

The mining industry suggests a number of guidelines for the periodic review of a Fund and for the audit process. The integrity of the review and audit is particularly important in view of the industry's recommendation that any surplus funds should be returned, net of appropriate tax adjustments, to the company.

The guidelines are the following:

Periodic review or audit	A periodic review or audit of activities of a Fund is necessary to ensure appropriate disbursement and use of funds pursuant to the approved decommissioning plan.
Scope of audit	An audit would include the preparation of financial statements and a technical review of work performed. It should also include, where applicable, a reassessment of reclamation requirements and funding contributions
Conduct of audit	An appropriate panel should be engaged to undertake the review and audit, using technical, engineering, legal and actuarial expertise.
Frequency	A review should be held with a stated frequency, which could be from three to five years, or more frequently if deemed desirable by the government or the company.
Disposition of surplus funds	Any surplus funds determined by a review should be returned, net of appropriate tax adjustments, to the company.

APPENDIX D

INSURANCE

Insurance Policy

Generally there are no insurance policies readily available to cover long-term reclamation costs. However, the insurance industry has shown some interest in this area and appears willing to consider "custom designing" an insurance instrument to meet the criteria of the government authorities.

One such proposal is outlined below. It should be cautioned that this proposal has not been tested in Canada and it may not apply in all situations.

Description: This funding mechanism is a special form of a performance bond. It provides the government with indemnity for a large ultimate dollar limit, say $100 million, but is subject to a maximum indemnity of a lesser dollar amount, say equal to expected annual reclamation costs, over any one twelve month period payable until the ultimate limit is reached. The bond is backed by a fund, which in effect initially equals the insurance premiums paid by the company..

Operations: The performance bond may be structured in many different ways to meet particular situations. Contributions or premiums, for example, may be made over a certain time period e.g. three or five years. The maximum indemnity or payout by the insurer in any twelve month period may be set up on a declining scale to match declining reclamation costs. The ultimate aggregate limit may also increase if investment conditions are favourable or payouts do not reach the levels forecast. The fund or insurance premiums are conservatively invested, for example in treasury bills, reflecting both the degree of risk and the "newness" of the instrument.

In order to draw funds under this performance bond, the government or perhaps even the company, would present their legitimate claims for reclamation work to the insurer, who would then make payment.

Characteristics: The terms and conditions contained in the performance bond will reflect the agreement between the company and the government. The premium paid by the company will be a function of the total estimated amount required to complete the decommissioning plan together with actuarial calculations to determine annual payout levels and the total aggregate amount of the bond. It may be possible, although likely more expensive, to stretch the premiums out into annual instalments.

Advantages: This funding mechanism may require smaller up-front dollar commitments, in terms of premiums, than a cash trust fund.

The insurance premiums would be tax deductible.

Less administration is required after it is set up than with a cash trust fund.

Disadvantages: This type of funding mechanism may prove to be expensive. For example, the initial premiums may be very high to ensure that the bond has substance. Moreover, in addition to the premium amounts there could be taxes and insurance brokerage fees.

This funding mechanism is untested in Canada and may require extensive work with the appropriate government authorities before they give their approval.

Any surpluses built up in the fund and ultimately not paid out, are not returned to the company.

Captive Insurance Company

A Captive Insurance Company ("Captive") is a funding vehicle that can aid in the administration and formalization of risk retention within the risk management function. It is an insurance company owned by the insured or an affiliate of the insured and is typically formed to insure the owner's risks. As such it is important to realize that there is no transfer of risk outside the corporate family. The Captive would represent, in simple terms, a vehicle for formally segregating the owner's retained risks. Although funds would be formally segregated, associated with this formalization are certain costs which must be weighed against the benefits derived.

Since the Captive is an incorporated entity it must be capitalized sufficiently to retain the risks assumed and to meet minimum statutory requirements to the Captive domicile. In general, premiums must be adequate to cover projected losses plus expenses less investment income.

Long-term commitment to the Captive and corporate responsibility for its operation are essential ingredients for its success.

As a result of the limited capitalization of a Captive, it usually participates in the primary layers where losses are large in number but predictable and normally purchases stop loss cover to limit its exposure. Quota share participation in excess layers is normally not viable due to the high risk involved and the relatively small premium levels associated with those layers. A commercial insurer pools risks and is capitalized to such extent that these excess layers can comfortably be assumed.

Captive Programs can be represented either by fronted or direct policies. Generally in Canada it is anticipated that the program would be fronted. When a policy is written with an insurer unlicensed in Canada (which a direct policy would be) federal excise tax at 10% of the gross premium is levied unless it can be proven that the insurance was unavailable domestically.

A fronted program can be structured in one of two ways. Structure A requires that the Captive take on significant levels of risk and purchase excess and stop loss insurance (normally arranged by parent company brokers). In structure B, the fronting company arranges a net line cede to the Captive and purchases the stop loss and excess cover directly from reinsurers. Structure B is generally less costly to administer as the Captive does not deal directly with reinsurers, but it does not allow the same flexibility with respect to the reinsurance market. Each set of corporate circumstances dictates which structure is more appropriate.

Advantages:

The benefits afforded by a Captive are:

- To provide certificate issuance
- To meet statutory coverage requirements through the fronting arrangement
- To access reinsurance markets
- To formalize the risk management function through:
  - Administration and co-ordination of a consolidated program
  - Accountability and
  - Optimization of deductibility levels
- To develop negotiating leverage with commercial markets; and
- To provide tax advantages

The extent of each of these benefits would need to be examined in detail. Provided the Captive is acceptable to the provincial mining authorities, however, it can be a viable alternative.

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48e CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

Garantie financière pour la récupération des sites miniers, la mise hors service des mines et les obligations après leur fermeture

L'Association minière du Canada

HALIFAX (Nouvelle-Écosse)
22-24 septembre 1991

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48TH ANNUAL MINES MINISTERS' CONFERENCE

Status Report on the Mine Environment Neutral Drainage (MEND) Program

Federal

HALIFAX, Nova Scotia
September 22-24, 1991

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ACID MINE DRAINAGE RESEARCH IN CANADA

SUMMARY

Acidic drainage is the largest single environmental problem facing the Canadian mining industry today. Methods to prevent or substantially reduce acidic drainage from occurring in waste rock piles and tailings sites, and on the walls of open pits, are being developed in a cooperative program called MEND (Mine Environment Neutral Drainage). The new technologies being developed will substantially reduce the long term financial liabilities facing industry at industry-owned waste sites, and liabilities facing public agencies at abandoned mine waste sites.

In 1988, the MEND program was established in Canada to initiate and co-ordinate research efforts. **MEND is a co-operative program financed and administered by the Canadian mining industry; the Canadian government through Energy, Mines and Resources Canada (CANMET), Environment Canada, and Indian and Northern Affairs Canada; and the governments of British Columbia, Manitoba, Ontario, Québec and New Brunswick,** where most of Canada's sulphide minerals are mined. Because of special technical needs, **a compatible research program was established in British Columbia, the BC Acid Mine Drainage Task Force.**

To date, $6 million dollars have been spent and committed to be spent by the three partners in the MEND program. Originally it was agreed that the mining industry, provinces and the federal government would each contribute 1/3 of the cost of a $12.5 million program over 5 years. However, to date the industry has committed 43% of the cost, the government of Canada 39% and the provinces 18%. Nevertheless, the provinces are increasing their financial commitment to MEND, particularly Ontario, where the first financial commitment is currently being made. Quebec and British Columbia continue to have strong commitments to MEND. Recently signed Mineral Development Agreements with New Brunswick and Manitoba contain substantial activity in acid mine drainage research.

Canada is the recognized leader in research and development on acid mine drainage, and this expertise is being sought by other countries. Although biggest economic benefit will be the reduction of financial liability in Canada, there is business potential in the marketing of Canadian expertise.

In 3 years the participants have committed the following funds to MEND:

Canada	$2,384,000	39.4%
Mining Industry	$2,579,000	42.6%
5 Provinces	$1,086,000	18.0%

ACID MINE DRAINAGE - BACKGROUND

For over two decades, the Canadian mining industry and the government of Canada conducted research into methods of establishing sustainable vegetative growth on tailings and waste rock. It was believed that this technology would alleviate acid drainage problems from these sites, thus allowing mining companies to abandon these sites without future liability. Very successful vegetation methods were developed, and many sites were vegetated. However after several years, the quality of the water draining from vegetated sites had not improved, and mining companies are faced with the prospect of continuing to operate and maintain lime treatment plants indefinitely. The waste sites **looked nice,** but vegetation was clearly not an acceptable solution to the problem, and new reclamation technology needed to be developed and demonstrated.

In response to the need to conduct research on acidic drainage, the Canadian mining industry initiated a task force in 1986. The task force consisted of a steering committee and a technical working group, with representation from the mining industry, CANMET, Environment Canada, British Columbia, Manitoba, Ontario, Québec and New Brunswick. The task force recommendations were published in July, 1988 (CANMET, 1988), and were implemented by a tripartite consortium organized under the **Mine Environment Neutral Drainage (MEND) program.** A second group in Canada is also coordinating research into the problem of acidic drainage and is known as the **British Columbia Acid Mine Drainage (BC AMD) Task Force.** The emphasis in British Columbia is on searching for ways to stop the occurrence of acid drainage from mine waste rock.

As of the end of 1990, the two levels of government and the Canadian mining industry have together spent $4.4 million on research projects to find ways to reduce the liabilities caused by acidification of mineral wastes. In 1991, $1.6 million in research projects are under way.

WHAT IS ACIDIC DRAINAGE ?

Like elsewhere in the world, Canadian copper, zinc, nickel, gold and uranium mines contain sulphide minerals, either in the ore or the surrounding waste rock. When these sulphide minerals, particularly pyrite and pyrrhotite, are exposed to oxygen and water, they oxidize, and surface waters become acidic if the right kind of acid-neutralizing materials are not present, such as calcite, the major constituent of limestone. The acidic water carries with it toxic concentrations of metals and elevated levels of dissolved salts. Naturally-occurring bacteria, thiobacilli

ferrooxidans, play a significant role in the acidification process. Rainfall and snow-melt flush the toxic solutions from the waste sites into the downstream environment. If acidic drainage is left uncollected and untreated, the drainage could contaminate groundwater and local water courses, damaging the health of plants, wildlife, and fish.

At active mine sites (and some inactive mine sites), mining companies operate comprehensive systems to collect and treat effluents and seepage from all sources. These facilities, when well operated and maintained, are sufficient to prevent downstream environmental impact. However, **acid generation may persist for hundreds of years following mine closure.** The operation of treatment plants for very long periods of time is clearly not desirable and is counter to the principles and goals of sustainable development. In addition, conventional technology using lime, produces sludges that contain a very low percentage by weight of solids. In some severe cases, in a few decades the volume of sludge will exceed the volume of tailings or waste rock producing the acidic drainage, and there will simply be no place to put the sludges.

Acidic drainage is not only caused by mining activity. Civil works can expose reactive sulphides; eg., at the Halifax airport, where remedial measures are necessary to treat acidic drainage from rock excavated for runways.

DIMENSIONS OF THE PROBLEM

Between 1984 and 1987, Energy Mines and Resources co-sponsored projects to define the extent of acid-generating mine waste at base metal mining operations. British Columbia, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Newfoundland, Yukon and Northwest Territories were all identified as having operating and/or abandoned acid generating waste sites, with a total area of over 15,000 hectares (37,000 acres). These wastes are largely the accumulation of the last forty years of mining. In the future, it seems reasonable to assume that the mining of lower grade ores together with the likelihood of increasing annual mineral production could lead to the accumulation of an equal quantity of acidic tailings and waste rock over the next twenty years.

The above surveys do not represent the entire Canadian inventory, since they did not include gold, coal, uranium or any kind of abandoned mine site for which responsibility has reverted to the Crown. The two provinces with the most extensive metal mining base, Ontario and Quebec, have recently completed surveys of their own abandoned mine sites. In Ontario, over 2000 abandoned mine sites were identified and many may pose an acidic drainage problem. Twenty sites have been well documented and they contain 55,000,000 tonnes (60,000,000 tons) of reactive sulphide tailings over a

surface area of 830 hectares (2030 acres). In Québec, about 107 abandoned mine sites exist. Twenty-one (21) of these sites have been classified as hazardous waste sites because of acidic drainage, and the total area was estimated at 4500 hectares (11,110 acres).

The cost of stabilizing reactive wastes is highly site specific, and thus will vary greatly from place to place. Under the most difficult conditions and applying existing, but unproven technology, the costs of stabilizing some sites have been estimated to be as high as $410,000 per hectare. Applying an average cost of $125,000 per hectare to the existing and future accumulation of acid generating waste, **the costs of reclamation at non-ferrous metal mine sites is $3 billion over the next twenty years. Funds required to deal with abandoned sites where liability cannot be established, and where the mineral rights have reverted to the crown, are estimated to be about $1 billion.**

PUBLIC CONCEPTION OF THE PROBLEM OF ACIDIC DRAINAGE

The public has limited knowledge of the problem of acid mine drainage, and with respect to mining, has been concentrating on the more visible issues like land use and short-term contamination of waters and air from mining and smelting operations. However, by becoming better informed and because of some representations by environmental advocacy groups, acid mine drainage is getting more public attention. For example, a full page advertisement in Maclean's magazine August 26, 1991 by the Canadian Parks and Wilderness Society states concerning a proposed mining development (Windy Craggy) in northwest British Columbia: "Deadly acid rock drainage would be formed during the mining process and pose an ongoing threat for many hundreds of years after the mine is gone".

The implications for the mining industry will be the increased cost of planning new mines, or expanding existing mines. MEND has provided to the industry the capacity to predict whether acidic drainage will occur or not. However, where acidic drainage is predicted to occur, the technology needs to be developed that will allow the mining industry to continue to develop mineral properties without the imposition of onerous long term liabilities. The development of this technology is the primary role of MEND.

NEW TECHNOLOGIES BEING DEVELOPED

The Canadian research programs have been to date successful in refining existing technologies, such as developing precise methods to predict and measure the extent of acidic drainage before it occurs on a large scale. Also, some promising results have been obtained during the studies into the prevention and control of acidic drainage using wet barriers and solid covers. For example, studies into the effects of depositing reactive tailings under water at 4 Canadian locations (2 in British Columbia and 2 in

Manitoba) have shown that sulphide minerals are stable under a water cover. Also, the dissolution of heavy metals from the tailings and overlying sediments is found to be minimal, that uptake of metals into the flora and fauna is negligible and that the water over the wastes supports thriving biological systems. **The researchers are not recommending that Canadian lakes be used for disposing of mine wastes, but rather that engineered water covers be considered as part of long term waste management.** A large scale test program is underway at a recently-closed uranium mine in Ontario.

The research into dry cover technology has resulted in the construction of devices to measure the performance of various cover system designs by monitoring moisture content and oxygen flux. This significant achievement will allow the testing of locally available cover materials to establish the best cover design configuration. A companion field project will demonstrate the performance of layered cover systems for comparison with laboratory data. The combined results of the two studies will provide the technical basis for designing covers on tailings, demonstrate the benefits of the technology in preventing or reducing the generation of acidic drainage, and provide the necessary information for optimization of cover designs.

MEND and related acid mine drainage research programs continue to generate considerable interest from the Canadian research community as demonstrated by the number of new and innovative proposals currently under consideration. One such proposal, for example, involves the microbial plugging of tailings to prevent the formation of acidic drainage in tailings. The project would involve the use of starved indigenous microorganisms which, when exposed to nutrients, reproduce and excrete polymers. The polymers fill the void spaces in the tailings, effectively preventing the movement of oxygen and water through the reactive mine wastes. Other technologies being developed include the use of biotechnology to treat small acidic seeps and the use of special cements and additives. Costs are being developed in trials for these and all other technologies.

THE CANADIAN MINING INDUSTRY AND ACID MINE DRAINAGE

Sixteen Canadian mining companies have contributed 42% of the $4.45 million in research expenditure in the past 2 years, and continue to take an active role in doing research at company laboratories and at mine sites. Major Canadian mining companies like Noranda, INCO and Falconbridge are leading participants in the research effort, and senior executives and managers from these and other companies devote considerable time to MEND. Although the mining companies are under increasing public scrutiny to make sure that the working and external environments are safe and clean, the commitment to the specific task of solving the problem of acid mine

drainage remains strong.

Nevertheless, with decreasing profit margins and increasing financial demands, mining company expenditure on acid mine drainage research may be in the future less than in the past 2½ years.

CANADIAN GOVERNMENTS AND ACID MINE DRAINAGE

The government of Canada plays a leading role in the coordination of the research and dissemination of the results of the research in Canada and other countries to the Canadian mining industry. In addition to a acid mine drainage research secretariat, the CANMET laboratories in Energy Mines and Resources do research and development projects funded by the industry and by other government agencies. The Government of British Columbia plays a leading role in coordinating the specific research needs in that province where the technical emphasis is on waste rock rather than on mill tailings as it is in the national perspective. Ontario and Quebec are active participants in the national program acid mine drainage research, providing substantial research funds and technical direction of the research effort through government-industry committees. Manitoba and New Brunswick are also active financial supporters of research and development.

Quebec has committed $400,000 annually for 5 years for acid mine drainage research. Ontario has committed $150,000 in the current year, and $300,000 for the next 3 years. MEND funding in the other 3 provinces is largely dependent the renewal of Mineral Development Agreements which have recently been signed in New Brunswick and Manitoba.

At the current level of funding, the 5 provinces will not achieve the 1/3 level of funding of the $12.5 million MEND program agreed to in 1988.

Quebec would like to see more federal funds for MEND be put into that province. At the end of 1991/92 fiscal year, Quebec will have spent approximately $350,000 on MEND-approved projects in Quebec, while Canada will have spent about $260,000 in that province.

CURRENT MEND RESEARCH THRUST

A list of projects currently underway is shown in Table 1. Both laboratory and field studies are underway. In addition to providing a coordination role by providing the MEND Secretariat, CANMET continues to conduct an extensive A-base and company funded program of research under MEND.

In November 1991, the Management Committee of MEND will meet in

Vancouver to review and replan the MEND program for the next 3 or more years.

MEND PARTICIPATION AND FUNDING

A list of MEND participants is shown attached in Table 2. Funding for MEND research comes from in-house research and development and cash contributions to others doing projects.

The financial commitment to MEND by the industry and 2 levels of government is shown in Figure 1. The mining industry has contributed the largest proportion of the funding, 43% of $6 million committed to the end of 1991. **The distribution of funding from federal sources is shown in Figure 2.**

The distribution of funding to MEND from the mining companies is shown in Figure 3. In addition MITEC (Mining Industry Technology Council of Canada) financially supports 2 full-time technical persons in the MEND Secretariat at CANMET.

Provincial commitments to MEND are shown in Figure 4. In all provinces, new acid mine drainage projects are being considered for funding in the current fiscal year.

TABLE 1

ACTIVE PROJECTS

MEND

04-Sep-91

Project	Description		1991 Budget	Sponsor
1.12.1	Compile AMD Prediction Data	$	15,000.00	BC ($15k)
1.19.1	Kinetic Tests for Cinola Gold Project	$	30,000.00	ENV.CAN ($30k)
1.23.1	Compilation of Rules for the Prediction of AMD	$	20,000.00	BC ($10k), ENV CAN ($10k)
1.26.1a	Development of Modelling Methodology for Prediction of Seepage from Acid Generating Waste Rock	$	90,000.00	ENV. CAN ($30k), BC ($60k)
2.11.1c	Evaluation of Existing Underwater Disposal Sites	$	50,000.00	Placer Dome ($52k)
2.13.2	Flooding of Existing Tailings Sites - Solbec Cupra	$	64,000.00	CANMET ($30k), CRM ($34k)
2.21.2	Engineered Dry Covers for Tailings	$	118,000.00	CANMET ($30k), Noranda ($30k), CRM ($58k)
2.31.1	Dry Covers on Waste Rock / Phase IV	$	219,700.00	CANMET ($92.3k), BM&S ($72.5K), NB (54.9k)
2.32.1	Blending & Segregation of Waste Rock - Kutcho Creek	$	30,000.00	Sumac ($20k), BC ($10k)
2.23.2	Hydrogeological & Geochemical Analysis to TTD System at Kidd Creek	$	60,000.00	Falconbridge ($60k)
2.23.2a	Porous Envelope Surrounding Tailings - Falconbridge	$	97,000.00	Falconbridge ($97k), Ontario ($13.5k)
2.32.2a	Co-disposal of Tailings & Waste Rock in Cells at Mines Selbaie	$	96,000.00	Selbaie ($20k), CRM ($72k), CANMET ($4k)
2.35.2	Lysimeter Evaluations of Cover Alternatives	$	81,000.00	Noranda ($65k), CRM ($16k)
2.41.1	Electrochemical Oxidation	$	60,000.00	CANMET ($35k), Lac ($10k), Noranda ($5k), HBM&S ($10K)
2.42.2	Development of Synthetic Polymers	$	83,000.00	INCO ($41.5k), Ontario ($41.5k)
2.44.1a&b	Microbial Plugging of Mine Tailings to Reduce the Production of AMD	$	100,000.00	CANMET ($60k), INCO ($10k), Teck ($10k), Noranda ($20k),
3.11.1c	Treatment of Acidic Seepage Employing Wetland Ecology & Microbiology	$	143,000.00	CANMET ($27k), ENV CAN ($27k), Denison ($15k), INCO ($24k), CRM ($50k)
3.12.2	Evaluation of Wetlands at Panel Site	$	45,000.00	Ontario ($22.5k), CANMET ($17.5k), Rio Algom ($5k)
3.21.1a	Metals Recovery from Acid Mine Drainage	$	25,000.00	CANMET ($15k), ENV CAN ($10k)
5.6.1	Second International Conference on the Abatement of Acidic Drainage, 199	$	40,000.00	Rio Algom ($4k), CANMET ($15k), CRM ($10k), Noranda ($5k), Teck ($5k), Falconbridge ($4k)
	Peer Review of Underwater Disposal	$	35000	CANMET ($35k)
	Total	$	1,501,700.00	

TABLE 2

MEND PARTICIPANTS

Atomic Energy Control Board
Canada Centre for Mineral and Energy Technology
Energy Mines and Resources Canada
Environment Canada
Indian and Northern Affairs Canada

BP Resources Limited, Mining Division
Cominco Limited
Cambior Inc.
Curragh Resources Limited
Denison Mines Limited
Equity Silver Mines Limited
Falconbridge Limited
Hudson Bay Mining and Smelting Company Limited
INCO Limited
Lac Minerals
Les Mines Selbaie
Noranda Minerals Inc.
Placer Dome Inc.
Rio Algom Limited
Teck Corporation
The Mining Association of Canada
The Mining Association of British Columbia
The Mining Industry Technology Council of Canada

British Columbia Ministry of Energy, Mines and Petroleum Resources
British Columbia Ministry of Environment
Manitoba Energy and Mines
Manitoba Environment
New Brunswick Department of Municipal Affairs and Environment
New Brunswick Department of Natural Resources
Ontario Ministry of Northern Development and Mines
Ontario Ministry of Environment
Ministère de l'Énergie et des Ressources du Québec
Centre de Recherches minérales
Ministère de l'Environnement du Québec

Associate Members

Australian Nuclear Science and Technology Organization
Boliden Mineral AB
Swedish National Environmental Protection Board
United States Bureau of Mines
United States Geological Survey
United States, Mine Reclamation Center
University of British Columbia
University of South Carolina
University of Waterloo

COMMITMENTS TO MEND 1989-1991

$6,049,000

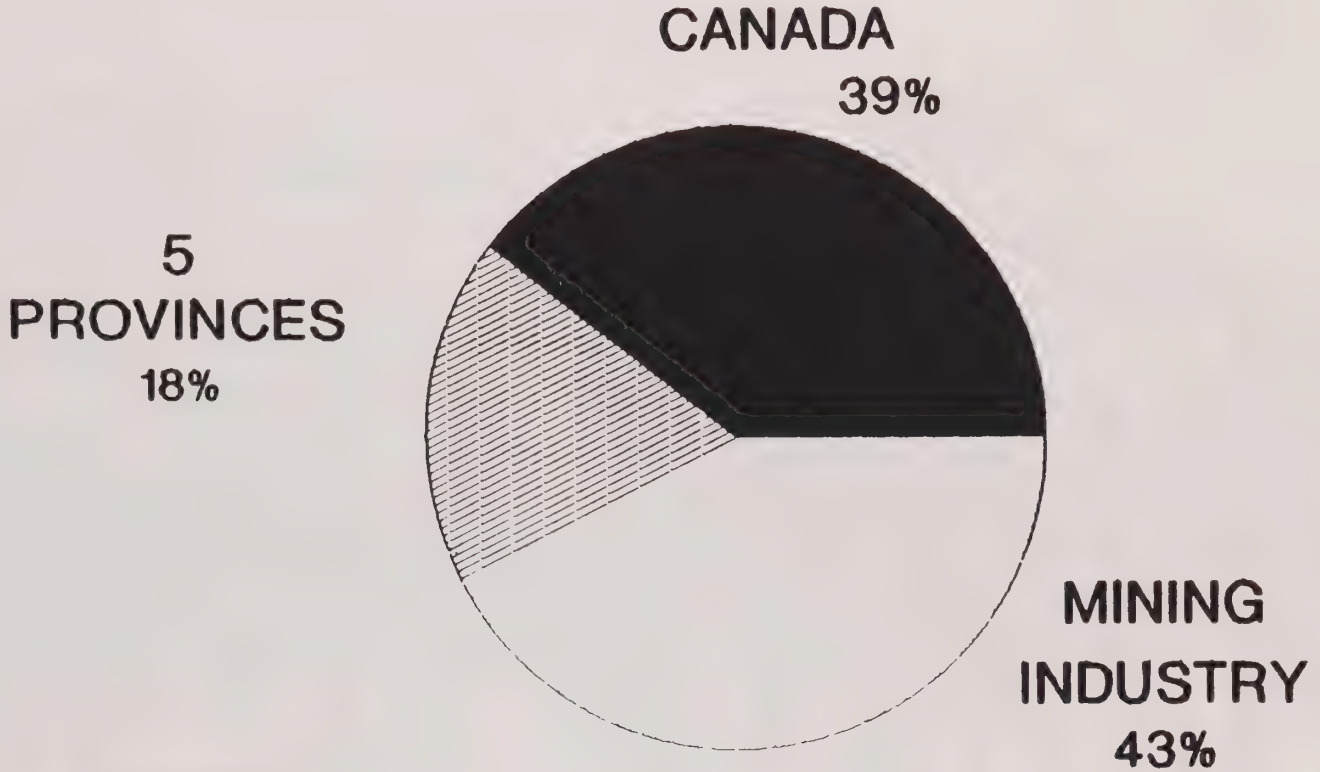


FIGURE 1

SEPTEMBER 1991

FEDERAL COMMITMENTS TO MEND 1989-91

$2,484,000

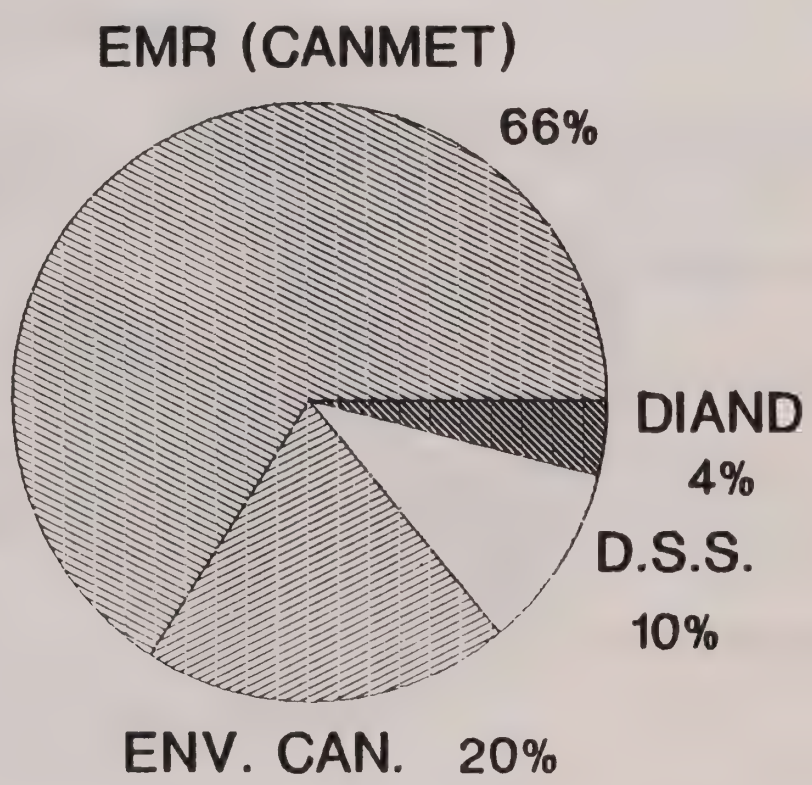


FIGURE 2

SEPTEMBER 1991

MINING INDUSTRY COMMITMENTS TO MEND 1988 - 1991

$2,579,000

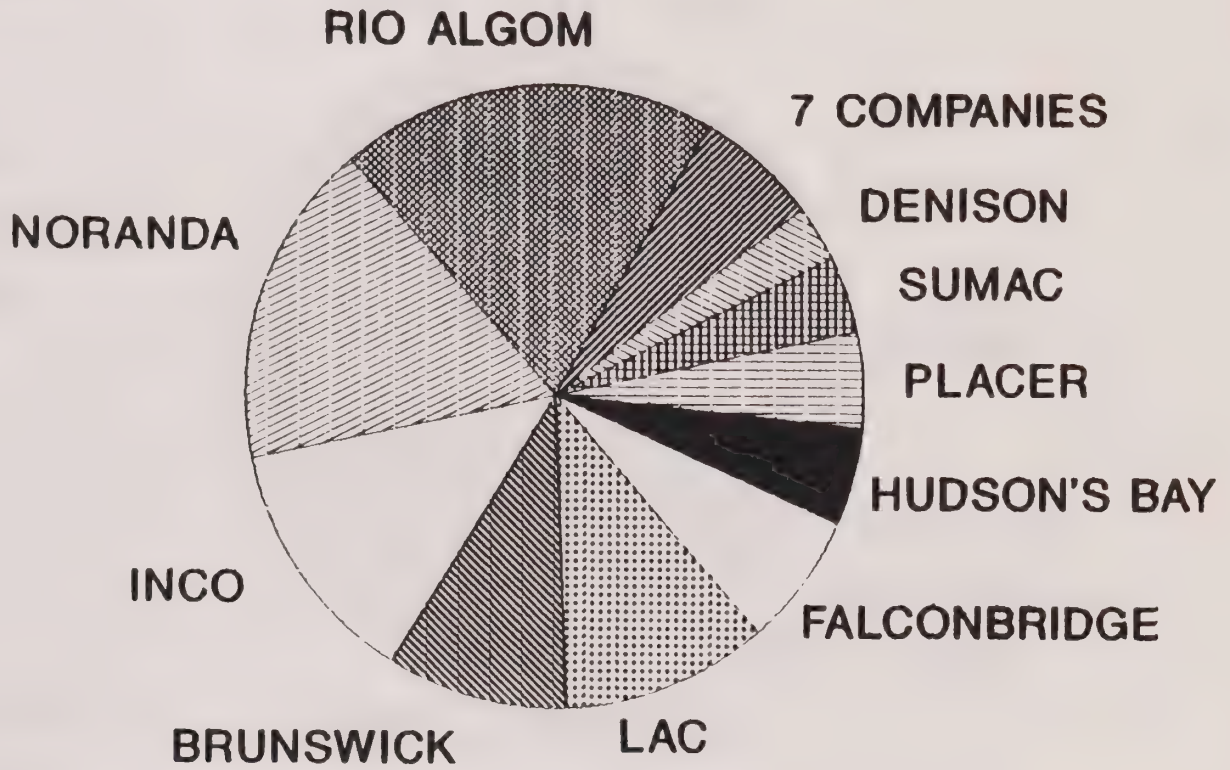


FIGURE 3

SEPTEMBER 1991

PROVINCIAL COMMITMENTS TO MEND
$1,086,000 1989 - 1991

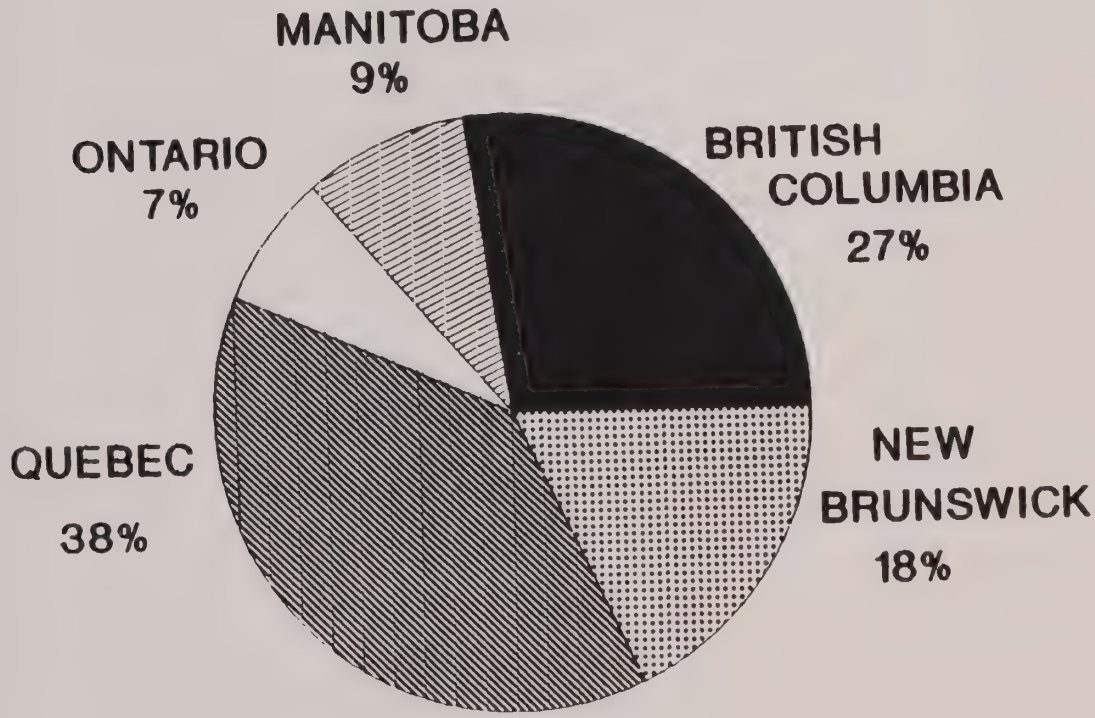


FIGURE 4

SEPTEMBER 1991

Note: All Provinces Considering More $ for MEND in 1991

Document: 830-399/009
(Traduction du Fédéral)

48E CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

Rapport d'étape sur le programme de Neutralisation des Eaux de Drainage dans l'Environnement Minier (NEDEM)

Fédéral

Halifax (Nouvelle-Écosse)
Du 22 au 24 septembre 1991

VEUILLEZ NOTER

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RECHERCHE SUR LE DRAINAGE MINIER ACIDE AU CANADA

RÉSUMÉ

Le drainage acide est le plus important problème environnemental auquel a à faire face l'industrie minière canadienne. Dans le cadre d'un programme de collaboration appelé NEDEM (Neutralisation des eaux de drainage dans l'environnement minier), on a entrepris l'élaboration de méthodes de prévention ou de réduction du drainage acide dans les tas de stériles et les décharges de résidus miniers et sur les parois des mines à ciel ouvert. Ces nouvelles technologies permettront de réduire considérablement les obligations financières à long terme de l'industrie relativement aux décharges qu'elle possède ainsi que les obligations des organismes publics envers les décharges de déchets miniers abandonnées.

En 1988, le programme NEDEM a été mis sur pied au Canada pour entreprendre des travaux de recherche et les coordonner. Le NEDEM est un programme de collaboration financé et administré par l'industrie minière canadienne, le gouvernement canadien par l'intermédiaire d'Énergie, Mines et Ressources Canada (CANMET), Environnement Canada et Affaires indiennes et du Nord Canada ainsi que les gouvernements de la Colombie-Britannique, du Manitoba, de l'Ontario, du Québec et du Nouveau-Brunswick où sont exploitées la

plupart des mines de minerais sulfurés du Canada. Pour répondre à des besoins techniques particuliers en Colombie-Britannique, le BC Acid Mine Drainage Task Force a été mis sur pied dans cette province.

À ce jour, les trois groupes associés du programme NEDEM ont dépensé et se sont engagées à dépenser six millions de dollars. Au départ, il avait été convenu que l'industrie minière, les provinces et le gouvernement fédéral contribueraient chacun le tiers des coûts d'un programme de 12,5 millions de dollars échelonné sur cinq ans. Cependant, l'industrie n'a à ce jour engagé que 43 % du coût, le gouvernement du Canada, 39 %, et les provinces, 18%. Par ailleurs, les provinces ont commencé à accroître leur contribution financière au NEDEM, particulièrement l'Ontario dont c'est la première contribution. Le Québec et la Colombie-Britannique n'ont pas cessé leur importante contribution au NEDEM. Les ententes d'exploitation minérale conclues récemment avec le Nouveau-Brunswick et le Manitoba prévoient de nombreuses activités de recherche dans le domaine du drainage minier acide.

Le Canada étant reconnu comme un chef de file dans la recherche et le développement sur le drainage minier acide, d'autres pays font appel à son expérience dans ce domaine. Même si le plus grand avantage économique qui en découlera sera la réduction des obligations financières au Canada, la commercialisation des connaissances acquises par le Canada dans ce domaine représente un

potentiel commercial.

En trois ans, les participants au NEDEM ont engagé les sommes suivantes :

Canada

Industrie minière

Cinq provinces

DRAINAGE MINIER ACIDE - HISTORIQUE

Pendant plus de deux décennies, l'industrie minière canadienne et le gouvernement du Canada ont réalisé des travaux de recherche sur les méthodes de végétalisation des tas de stériles et des décharges de déchets miniers. Cette méthode devait atténuer les problèmes de drainage acide à partir de ces sites de façon à permettre aux sociétés minières de quitter ces sites sans obligations futures. Des méthodes de végétalisaton très efficaces ont été élaborées, et de nombreux sites ont été végétalisés. Cependant, après plusieurs années, la qualité de l'eau de drainage provenant des sites végétalisés ne s'est pas améliorée de sorte les sociétés minières se voient confrontées à la perspective de devoir exploiter et entretenir indéfiniment des usines de traitement à la chaux. Même si l'aspect des décharges avait été amélioré, la végétélisation ne constituait nettement pas une solution acceptable. Il fallait donc

mettre au point et démontrer une nouvelle technologie de restauration.

En 1986, pour répondre à la nécessité de mener des recherches sur le drainage acide, l'industrie minière canadienne a mis sur pied un groupe de travail. Ce groupe composé d'un comité directeur et d'une équipe de travail technique dont les membres sont des représentants de l'industrie minière, de CANMET, d'Environnement Canada et des gouvernements de la Colombie-Britannique, du Manitoba, l'Ontario, du Québec et du Nouveau-Brunswick. Les recommandations du groupe de travail ont été publiées en juillet 1988 (CANMET, 1988) et appliquées par un consortium tripartite formé dans le cadre du programme de Neutralisation des eaux de drainage dans l'environnement minier (NEDEM). Un autre groupe au Canada coordonne des recherches portant sur le problème du drainage acide, il s'agit du British Columbia Acid Mine Drainage (BC AMD) Task Force. En Colombie-Britannique, on met l'accent sur les façons d'éliminer le drainage acide dans les décharges de déchets miniers.

À la fin de 1990, les deux niveaux de gouvernement et l'industrie minière canadienne avaient dépensé ensemble 4,4 millions de dollars à des projets de recherche pour trouver des moyens de réduire les obligations liées à l'acidification des déchets miniers. En 1991, des projets de recherche évalués à 1,6 million de dollars sont réalisés.

QU'ENTEND-ON PAR DRAINAGE ACIDE?

Comme toutes les autres mines de cuivre, de zinc, de nickel, d'or et d'uranium dans le monde, les mines canadiennes contiennent des minéraux sulfurés, que ce soit dans le minerai ou dans la gangue environnante. Lorsque des minéraux sulfurés, en particulier la pyrite et la pyrrhotite, sont exposés à l'oxygène et à l'eau, ils s'oxydent, acidifiant les eaux superficielles si le sol ne contient pas de minéraux de neutralisation comme la calcite, principale composante du calcaire. L'eau acide transporte des métaux en concentrations toxiques et des sels dissous en fortes concentrations. Les bactéries naturelles Thiobacilli ferrooxidans jouent un rôle important dans le processus d'acidification. Les précipitations et la fusion nivale expulsent les solutions toxiques des décharges vers le milieu en aval. Si les eaux de drainage acides ne sont pas recueillies et traitées, elles peuvent contaminer les eaux souterraines et les cours d'eau locaux, affectant ainsi la santé des plantes, des animaux sauvages et du poisson.

Aux sites miniers actuellement exploités (et à certains autres non exploités), les sociétés minières utilisent des systèmes globaux pour recueillir et traiter les effluents et les eaux d'infiltration quelle que soit leur source. Ces installations, lorsqu'elles sont bien exploitées et bien entretenues, suffisent à empêcher l'acidification de l'environnement en aval. Cependant,

l'acidification peut se poursuivre pendant des centaines d'années après la fermeture de la mine. L'exploitation des usines de traitement pendant de très longues périodes n'est absolument pas souhaitable et contrevient aux principes et aux objectifs d'un développement durable. En outre, la technologie classique liée à l'utilisation de chaux produit des boues contenant un très faible pourcentage en poids de matières solides. Dans certains situations critiques, le volume des boues dépassera en quelques décennies le volume des déchets ou des stériles qui étaient à l'origine du drainage acide. On manquera par conséquent d'espaces pour entreposer ces boues.

Le drainage acide est non seulement causé par l'activité minière, mais également par les travaux géotechniques qui peuvent mettre à nu des sulfures réactifs. C'est ainsi qu'à l'aéroport de Halifax, il a fallu prendre des mesures correctives pour traiter le drainage acide produit par les roches excavées pour la construction des pistes d'atterrissage.

ENVERGURE DU PROBLEME

Entre 1984 et 1987, Énergie, Mines et Ressources a coparrainé des projets pour déterminer l'étendue des décharges de déchets acidogènes des mines de métaux communs. Les provinces de la Colombie-Britannique, de la Saskatchewan, du Manitoba, de l'Ontario, du Québec, du Nouveau-Brunswick, de Terre-Neuve, du

Yukon et des Territoire du Nord-Ouest comptent sur leur territoire des décharges acidogènes actuellement exploitées ou abandonnées, correspondant à une superficie totale de plus de 125 000 hectares (37 000 acres). Ces déchets résultent en grande partie de l'exploitation minière des quarante dernières années. Au cours des vingt prochaines années, il semble raisonnable de présumer que l'exploitation de gisements à plus faible teneur, conjuguée à une augmentation vraisemblable de la production minérale annuelle, se traduira par l'accumulation d'une quantité aussi élevée de déchets miniers et de stériles acides .

Les chiffres donnés ci-dessus ne correspondent pas à un inventaire complet puisqu'ils n'incluent pas les sites miniers d'or, de charbon, d'uranium ou d'autres minéraux dont la responsabilité a été confié au gouvernement. L'Ontario et le Québec qui sont les deux provinces où l'on trouve les plus vastes mines de métaux communs, ont récemment réalisé un relevé de leur propres sites miniers abandonnés. En Ontario, on a dénombré plus de 2000 sites abandonnés dont plusieurs pourraient causer des problèmes de drainage acide. On a recueilli des données sur vingt sites contenant 55 000 000 tonnes (60 000 000 tonnes) de déchets sulfurés réactifs sur une superficie de 830 hectares (2030 acres). Au Québec, il y a environ 107 sites miniers abandonnés. Vingt-et-un de ces sites ont été classés dangereux, étant à l'origine d'un drainage acide, et la superficie totale a été évaluée à 4500 hectares (11 110 acres).

Comme les coûts de stabilisation des déchets réactifs dépendent de chacun des sites, ils varient considérablement. Dans des conditions très difficiles et en appliquant une technologie connue mais non éprouvée, les coûts de stabilisation de certains sites ont été évalués à 410 000 $ par hectare. En prévoyant un coût moyen de 125 000 $ par hectare pour traiter les accumulations actuelles et futures de déchets acidogènes, les coûts de restauration des sites miniers de métaux non ferreux s'élèveraient à trois milliards de dollars au cours de vingt prochaines années. Les fonds nécessaires au traitement des sites abandonnés dont la responsabilité n'a pas été établiee et dont les droits miniers ont été remis à la couronne, ont été évalués à environ un milliard de dollars.

PERCEPTION PAR LE GRAND PUBLIC DU DRAINAGE ACIDE

Le grand public a une connaissance limitée du problème du drainage minier acide, et, concernant l'exploitation minière, ce sont les questions les plus visibles comme l'utilisation des terres et la contamination à court terme des eaux et de l'air par les mines et les usines de fusion qui ont le plus retenu l'attention. Cependant, comme la diffusion des informations s'est améliorée et que des groupes de protection de l'environnement ont fait des représentations à cet effet, le drainage minier acide préoccupe de plus en plus le public. C'est ainsi que dans une page publicitaire parue dans le numéro du 26 août 1991 du magazine Maclean's, la Société pour la protection des parcs et des sites naturels au

Canada déclarait au sujet d'un projet d'exploitation minière (Windy Craggy) dans le nord-ouest de la Colombie-Britannique : "L'exploitation créerait un drainage acide mortel qui continuerait d'être un danger pendant des centaines d'années, même après la fermeture de la mine."

Les répercussions de ce problème sur l'industrie minière se traduiront par une augmentation des coûts de planification des nouvelles mines et d'agrandissement des mines actuelles. Le NEDEM donne la possibilité à l'industrie de prédire si le drainage sera acide ou non. Toutefois, dans les cas où l'on prévoit un drainage acide, il faut mettre au point un technologie qui permettra à l'industrie minière de poursuivre la mise en valeur des propriétés minières sans que des obligations à long terme onéreuses lui soient imposées. La mise au point de cette technologie est la fonction principale du NEDEM.

MISE AU POINT DE NOUVELLES TECHNOLOGIES

Par les programmes de recherche réalisés au Canada, on a réussi jusqu'à maintenant à affiner les technologies actuelles en élaborant des méthodes permettant de prévoir et de mesurer avec précision l'importance du drainage acide avant qu'il n'atteigne de vastes proportions. De plus, on a obtenu certains résultats prometteurs dans le cadre des études portant sur la prévention et

le contrôle du drainage acide, en utilisant des barrières humides et des couvertures de matières solides. Par exemple, des études réalisées sur les effets de l'entreposage de résidus réactifs sous l'eau à quatre emplacements différents au Canada (deux en Colombie-Britannique et deux au Manitoba) ont révélé que les minéraux sulfurés sont stables sous l'eau. De plus, la dissolution des métaux lourds provenant des déchets et des sédiments sus-jacents est minime, l'absorption des métaux par la flore et la faune est négligeable et l'eau recouvrant les déchets contient des systèmes biologiques en santé. Les chercheurs ne recommandent pas que les lacs canadiens servent à l'entreposage des déchets miniers, mais plutôt que l'on considère les couvertures d'eau comme faisant partie intégrante d'une gestion à long terme des déchets. Un programme d'essai à grande échelle a été entrepris à une mine d'uranium récemment fermée en Ontario.

Les travaux de recherche portant sur les couvertures sèches ont mené à la construction d'appareils pour mesurer le rendement de couvertures de conception différentepar la surveillance de la teneur en humidité et du flux d'oxygène. Cette importante réalisation permettra de faire l'essai de matériaux de couverture localement accessibles de façon à concevoir la meilleure configuration de couverture possible. Un projet parallèle sur le terrain consistera à démontrer le rendement des couvertures stratifiées et à comparer les données avec celles recueillies en laboratoire. Les résultats combinés des deux études formeront la

base technique pour la conception de couvertures aménagées sur des résidus, seront utiles pour montrer les avantages de cette technologie en matière de prévention ou de réduction du drainage acide et procureront les informations nécessaires à l'optimisation des couvertures.

Le NEDEM et les programmes de recherche associés sur le drainage minier acide continuent de susciter un intérêt considérable de la part des organismes de recherche au Canada, comme en témoigne le nombre élevé de propositions, nouvelles et innovatrices, actuellement à l'étude. À titre d'exemple, l'une des propositions consiste à recourir au colmatage microbien des résidus pour empêcher la formation de drainage acide. Pour ce faire, il faudrait utiliser des microorganismes indigènes affamés qui, en étant exposés aux nutriments, reproduiraient et excréteraient des polymères. Les polymères rempliraient les vides interstitiels et empêcheraient le déplacement de l'oxygène et de l'eau à travers les déchets miniers réactifs. Parmi les autres technologies en cours d'élaboration, mentionnons l'utilisation de la biotechnologie pour traiter les petites infiltrations acides et l'utilisation de ciments et d'additifs spéciaux. Les coûts sont établis à partir d'essais portant non seulement sur ces technologies mais également sur toutes les autres technologies.

L'INDUSTRIE MINIÈRE CANADIENNE ET LE DRAINAGE MINIER ACIDE

Au cours des deux dernières années, seize sociétés minières canadiennes ont financé 42 % des travaux de recherche s'élevant à 4,45 millions de dollars et elles continuent de jouer un rôle actif en effectuant des recherches en laboratoire et sur les sites miniers. Les grandes sociétés minières canadiennes, comme la Noranda, l'INCO et la Falconbridge, sont des chefs de file en matière de recherche, et les cadres supérieurs et les gestionnaires de ces sociétés, entre autres, consacrent beaucoup de temps au NEDEM. Malgré le fait que les sociétés minières sont de plus en plus surveillées par le public qui veut s'assurer que les milieux de travail et l'environnement sont sûrs et propres, leur engagement à régler le problème du drainage minier acide demeure ferme.

Néanmoins, il se pourrait qu'étant donné la baisse des marges de profit et l'augmentation des exigences financières, les dépenses des sociétés minières faites pour les recherches sur le drainage minier acide soient dans l'avenir moindres qu'au cours de deux années et demie qui viennent de s'écouler.

LE GOUVERNEMENT CANADIEN ET LE DRAINAGE MINIER ACIDE

Le gouvernement du Canada joue un rôle primordial dans la coordination de la recherche et la diffusion des résultats de recherche recueillis au pays et à l'étranger dans l'industrie minière canadienne. Complétant les travaux du Secrétariat de recherche sur le drainage minier acide, les laboratoires de CANMET

(Énergie, Mines et Ressources) réalisent des projets de recherche et de développement financés par l'industrie et d'autres organismes gouvernementaux. Le gouvernement de la Colombie-Britannique joue un rôle important en coordonnant les besoins de recherche spécifiques de cette province où l'on met plutôt l'accent sur les déchets miniers que sur les résidus de traitement, comme c'est le cas à l'échelle nationale. L'Ontario et le Québec sont des participants actifs des travaux de recherche sur le drainage minier acide du programme national, en accordant des fonds de recherche substantiels et en donnant une orientation technique aux travaux de recherche par la mise sur pied de comités où sont représentés le gouvernement et l'industrie. Le Manitoba et le Nouveau-Brunswick financent elles aussi des travaux de recherche et de développement.

Le Québec a engagé 400 000 $ annuellement pendant cinq ans pour la réalisation de travaux de recherche sur le drainage minier acide. L'Ontario a engagé 150 000 $ au cours de la présente année et 300 000 $ au cours de trois prochaines années. Le financement du NEDEM dans les trois autres provinces dépend largement du renouvellement des accords d'exploitation minérale qui ont été récemment conclus avec le Nouveau-Brunswick et le Manitoba.

Au niveau actuel de financement, les cinq provinces n'atteindront pas le tiers du financement du programme NEDEM (12,5 millions de dollars) qui avait été convenu en 1988.

Le Québec souhaiterait que le gouvernement fédéral augmente sa contribution pour que le NEDEM soit mis en oeuvre dans cette province. À la fin de l'année financière 1991-1992, le Québec aura dépensé environ 350 000 $ à des projets approuvés par le NEDEM au Québec tandis que le Canada aura dépensé environ 260 000 $ dans cette province.

OBJECTIFS ACTUELS DU NEDEM EN MATIÈRE DE RECHERCHE

Une liste des projets en cours est présenté au tableau 1. Des études ont été amorcées à la fois en laboratoire et sur le terrain. En plus de jouer un rôle de coordonnateur par l'intermédiaire du Secrétariat du NEDEM, CANMET continue de réaliser un vaste programme financé par la voie des services votés et par des sociétés dans le cadre du NEDEM.

En novembre 1991, le comité de gestion du NEDEM se réunira à Vancouver pour analyser et replanifier le programme du NEDEM pour au moins les trois prochaines années.

PARTICIPATION AU NEDEM ET FINANCEMENT

La liste des participants au NEDEM est présentée au tableau 2. Les travaux de recherche du NEDEM sont financés par le biais de travaux internes de recherche et de développement ainsi que de contributions financières à d'autres projets.

L'engagement financier au NEDEM pris par l'industrie et les deux niveaux de gouvernement est indiqué à la figure 1. La contribution de l'industrie minière est la plus importante, soit 43 % des 6 millions de dollars engagés à la fin de 1991. La répartition des fonds provenant de sources fédérales est donnée à la figure 2.

La répartition des fonds versés au NEDEM par les sociétés minières est montrée à la figure 3. De plus, le Conseil canadien de l'industrie minière sur la technologie a accordé un appui financier à la création de deux postes techniques à temps plein au Secrétariat du NEDEM à CANMET.

Les engagements pris par les provinces au NEDEM sont énumérés à la figure 4. Dans toutes les provinces, on prévoit de financer au cours de la présente année financière de nouveaux projets sur le drainage minier acide.

TABLEAU 1

1- PROJETS ACTIFS

2- NEDEM

3- Projet

4- Description

5- Budget 1991

6- Source de financement

7- 4 sept. 1991

8- Compilation de données de prévision sur le DMA

Essais cinétiques pour le projet aurifère Cinola

Compilation de règles de prévision du DMA

Élaboration d'un méthodologie de modélisation pour la prévision de l'infiltration d'eau provenant de déchets miniers acidogènes

Évaluation des sites actuels d'entreposage sous l'eau

Inondation des décharges existantes - Solbec Cupra

Conception de couvertures sèches pour résidus

Couvertures sèches sur stériles / phase IV

Mélange et ségrégation de stériles - Kutcho Creek

Analyse hydrogéologique et géochimique pour le système d'épaississement des résidus miniers par l'aménagement de talus à Kidd Creek

Enveloppe poreuse pour entourer des dépôts de résidus - Falconbridge

Co-élimination de résidus et de stériles dans des cellules aux Mines Selbaie

Évaluations par lysimètre de couvertures de remplacement

Oxydation électrochimique

Mise au point de polymères synthétiques

Colmatage microbien de résidus pour réduire le DMA

Traitement des eaux d'infiltration acides basé sur l'écologie et la microbiologie des marécages

Évaluation de marécages au site de Panel

Récupération de métaux dans les eaux de drainage minier acide

Deuxième conférence internationale sur la réduction du drainage acide

Révision par les pairs de l'entreposage subaquatique

9- C.-B. (15 000 $)

10- Total

PARTICIPANTS DU NEDEM

Commission de contrôle de l'énergie atomique

Centre canadien de la technologie des minéraux et de l'énergie

Énergie, Mines et Ressources Canada

Environnement Canada

Affaires indiennes et du Nord Canada

Ressources BP Canada, Division minière

Cominco Limitée

Cambior Inc.

Curragh Resources Limited

Denison Mines Limited

Equity Silver Mines Limited

Falconbridge Limitée

La compagnie Minière et Métallurgique de la Baie d'Hudson Limitée

INCO Limitée

Lac Minerals

Les Mines Selbaie

Minéraux Noranda Inc.

Placer Dome Inc.

Rio Algom Limitée

Corporation Teck

L'Association minière du Canada

The Mining Association of British Columbia

Le Conseil canadien de l'industrie minière sur la technologie

British Columbia Ministry of Energy, Mines and

Petroleum Resources

Britsh Columbia Ministry of Environment

Énergie et Mines Manitoba

Environnement Manitoba

Ministère des Affaires municipales et de l'Environnement

du Nouveau-Brunswick

Ministère des Ressources naturelles du Nouveau-Brunswick

Ministère du Développement du Nord et des Mines de l'Ontario

Ministère de l'Environnement de l'Ontario

Ministère de l'Énergie et des Ressources du Québec

Centre de recherches minérales

Ministère de l'Environnement du Québec

Membres associés

Australian Nuclear Science and Technology Organization

Bolides Mineral AB

Swedish National Environmental Protection Board

United States Bureau of Mines

United States Geological Survey

United States, Mines Reclamation Center

University of British Columbia

University of South Carolina

University of Waterloo

FIGURE 2

1- ENGAGEMENTS DU GOUVERNEMENT FÉDÉRAL AU NEDEM EN 1989-1991

2 484 000 $

2- EMR (CANMET)

3- MAINC

4- MAS

5- ENV. CANADA

6- SEPTEMBRE 1991

FIGURE 1

1- ENGAGEMENTS AU NEDEM EN 1989-1991

2- CANADA

3- PROVINCES

4- INDUSTRIE MINIÈRE

5- SEPTEMBRE 1991

FIGURE 4

1- ENGAGEMENTS DES PROVINCES AU NEDEM

2- MANITOBA

3- COLOMBIE-BRITANNIQUE

4- NOUVEAU-BRUNSWICK

5- ONTARIO

6- QUÉBEC

7- SEPTEMBRE 1991

8- REMARQUE : Toutes les provinces prévoient consacrer des sommes plus élevées dans le NEDEM en 1991

FIGURE 3

1- ENGAGEMENTS DE L'INDUSTRIE MINIÈRE AU NEDEM

2- RIO ALGOM

3- NORANDA

4- INCO

5- BRUNSWICK

6- 7 SOCIÉTÉS

DENISON

SUMAC

PLACER

BAIE D'HUDSON

FALCONBRIDGE

7- LAC

8- SEPTEMBRE 1991

Document: 830-399/010

48TH ANNUAL MINES MINISTERS' CONFERENCE

Report on Native Participation in Mining: Phase II - It can be done

Federal

HALIFAX, Nova Scotia
September 22-24, 1991

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REPORT ON
NATIVE PARTICIPATION IN MINING

PHASE II

IT CAN BE DONE

prepared by the

Sub-committee of the
Intergovernmental Working Group
on the Mineral Industry

November 1991

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NATIVE PARTICIPATION IN MINING

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Carolyn Connor, Jack Fraser, Brian Goffin, Paulette Marion, Soussan Marmont, Steve Rozak, Lynda Sturney, Karen Vander Weyst and Mellanie Wilkins.

Peut être aussi obtenue en français.

EXECUTIVE SUMMARY

This project, Native Participation in Mining, was initiated at the request of federal/provincial/territorial Mines Ministers at their annual meeting in August 1989. The Mines Ministers have a working group that analyzes issues and reports back each year. This group, the Intergovernmental Working Group on the Mineral Industry, formed a Sub-committee to study the nature of Native participation in mining.

Most of the provinces/territories and the federal government actively participate in the Sub-committee.

The Sub-committee's objectives, are:

- to document best practices, with a realistic view to the incidence of the cost and benefits of each and to identify new ways of matching Native lifestyles with the mineral industry employment opportunities

- to identify the concrete steps which governments, mining companies, Native groups and individuals can take to substantially boost Native participation in mining

- to examine what, if any, incentives could be identified and what legal and structural barriers to development could be removed, in order to speed progress toward the goal of increased Native participation in mining.

In its first year of operation the Sub-committee members documented "best cases", looked at demographic information, prepared a bibliography and outlined government policies and programs. The results of this work were released in the Phase I Report in February, 1991.

In preparing the Phase II Report, the Sub-committee undertook widespread consultations with mining and Aboriginal associations. As a result, two major initiatives were pursued and included in the Phase II Report.

1) An extensive survey, through the use of questionnaires, of the mining companies and Aboriginal reserves/communities was undertaken in each participating province and territory.
2) A number of practical items for the use of the mining industry in their efforts to increase the level of Aboriginal participation in mining were produced. These are included in the appendices.

In addition, effort has been made to show the endeavours of different groups (provinces, mining associations, tribal councils) to increase the level of participation of Aboriginal people in this industry.

The Phase II Report, IT CAN BE DONE, includes:

- A summary report
- Appendices:
  - a selective annotated bibliography
  - a series of maps showing the relationship between mines and Aboriginal reserves/communities
  - a checklist to assist mineral companies operating on or near Aboriginal lands
  - a summary of socio-economic agreements
  - five case studies documenting examples of programs/policies designed to improve the well-being of Aboriginal peoples
  - initiatives undertaken by mineral associations to increase Aboriginal participation in mining
  - a summary of the results of the questionnaires
  - an analysis of the results of the questionnaires

Although this is a very complex subject, the following primary observations are noted.

Under the right circumstances (especially fly-in/fly-out operations) mining companies have been able to achieve quite high levels of Aboriginal participation and involvement. The main factor influencing the level of Aboriginal participation is the work rotation (x weeks in/x weeks out) that has been developed at fly-in/fly-out operations. This rotation allows Aboriginal employees to work inside the wage economy and to also practice their more traditional pursuits (hunting, fishing, trapping, etc.).

Companies with socio-economic agreements generally have achieved both a higher level of Aboriginal participation at their minesite and a greater understanding of their operations by the local peoples.

Communication between the mining company and the local communities/reserves is of great importance. However, no matter how well a company believes it is communicating, the communities/reserves invariably feel that they could be doing a better job.

Many Aboriginal people would prefer to participate in the industry by providing services through their own businesses.

At the 1991 Mines Ministers annual meeting, the Sub-committee was directed to continue the project for a third year. During this period, the Sub-committee plans to expand the survey to include exploration companies, produce a number of brochures based on results to date, and develop further case studies.

TABLE OF CONTENTS

Executive Summary

1. Introduction 1

2. Report Summary 2

2.1. Selective Annotated Bibliography. 2
2.2. Maps - Aboriginal Communities/Reserves in Relation to Operating Mines 3
2.3. Checklist to Assist Mineral Companies Operating On or Near Aboriginal Lands 4
2.4. Summary of Socio-economic Agreements. 5
2.5. Case Studies. 6
2.6. Mineral Associations' Involvement with Aboriginal People 6
2.7. Summary of Responses to Questionnaires on Aboriginal Participation in Mining 7
2.8. Analysis of Responses to Questionnaires on Aboriginal Participation in Mining 7

APPENDIX A: Selective Annotated Bibliography. 9

APPENDIX B: Maps - Aboriginal Communities/Reserves in Relation to Operating Mines. 19
Addendum A: Sources of Data Used For Maps. 33

APPENDIX C: Checklist to Assist Mineral Companies Operating On or Near Aboriginal Lands . . . 35
Addendum A: Sources of Information Concerning Aboriginal People 41
Addendum B: Native/Northern Publications Suitable for Employment Advertisement. 43

APPENDIX D: Summary of Socio-economic Agreements. . . . 49
Addendum A: Provincial Specifications as Determined from Available Agreements 61

APPENDIX E: Case Studies. 63

APPENDIX F: Mineral Associations' Involvement with Aboriginal People 89

APPENDIX G: Summary of Responses to Questionnaires on Aboriginal Participation in Mining . . . 95
Addendum A: Mining Company Survey 115
Addendum B: Aboriginal Community/Reserve Survey 123

APPENDIX H: Analysis of Responses to Questionnaires on Aboriginal Participation in Mining . . . 133

1. INTRODUCTION

In August 1989, the Intergovernmental Working Group on the Mining Industry (IGWG) formed a Sub-committee to study the nature of Native participation in the mining industry in Canada.

The Sub-committee objectives were defined as follows:

1. Taking due account of regional differences and the demands of the different kinds of mine developments, to document "best practices", with a realistic view to the incidence of the costs and benefits of each. Also, to identify new ways of matching Native lifestyles with mineral industry employment opportunities.

2. To identify the concrete steps which governments, mining companies, Native groups and individuals can take to substantially boost Native participation in mining.

3. To examine what, if any, incentives could be identified and what legal and structural barriers to development could be removed, in order to speed progress toward the goal of increased Native participation in mining.

Native participation was defined broadly to include employment, provision of services by Natives or non-Native owned companies, financial involvement, and input into mine development and regulatory review process.

At the beginning of its operation, the Sub-committee identified a number of tasks to be completed, over at least a two year period, in order for it to meet the defined objectives. These tasks included:

- documentation of best case histories involving the participation of Natives in the Canadian mining industry
- compilation of a selective annotated bibliography
- documentation of existing government practices, procedures, and policies which enhance Native participation in the mining industry
- documentation of the mining/Native demographic relationship

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[1] For the purposes of this study, "Native" includes the following Aboriginal populations: Status and Non-status Indians, Metis and Inuit. The terms Native and Aboriginal are both used in the report. The mining industry covers all phases including exploration, pre-construction, construction, mine/mill operation, smelting and refining, maintenance and mine reclamation.

- examining possible incentives that could be used to meet the goal of further Native participation in mining
- identification of the barriers to Native participation
- identification of the ways in which the traditional Native lifestyle can be integrated with the wage-based economy
- listing ways that governments, companies, Native groups and individuals can or may take to boost Native participation in mining.

During its first year the Sub-committee, chaired by British Columbia and co-chaired by the federal Department of Indian Affairs and Northern Development (DIAND), examined the relationship between Canada's Aboriginal people and the mining industry and dealt with the first four of the identified tasks.

In February 1991, following consultations with three national Aboriginal organizations (Assembly of First Nations, Inuit Tapirisat of Canada, and the Native Council of Canada) and two mining associations (Mining Association of Canada, and the Prospectors and Developers Association of Canada) the Sub-committee released the Phase I Report.

During its second year, the Sub-committee was chaired by Saskatchewan and again co-chaired by DIAND. Alberta, British Columbia, Manitoba, New Brunswick, Northwest Territories, Ontario and Yukon participated as members.

After reviewing the first year of its operation, the Sub-committee agreed that the second year would be best spent by building upon the information bank that had already been started and by engaging in meaningful consultation, through the use of widespread surveys, with both the mining industry and the Aboriginal people. This approach would enable it to undertake a number of the remaining identified tasks and also to identify as fully as possible both the costs and benefits, to all involved, of Native participation in this industry.

It was also felt that greatest benefit to the mining industry would be through the provision of a number of reference tools which would enable it to learn more about Aboriginal people and which would facilitate contacts between the two groups.

2. REPORT SUMMARY

The main body of this report provides a summary of each task undertaken by the Sub-committee. A more detailed presentation is found in the Appendices.

2.1 Selective Annotated Bibliography

special emphasis on the libraries at the national headquarters of the three major Aboriginal organizations (Assembly of First Nations, Inuit Tapirisat of Canada, and the Native Council of Canada).

The bibliography contains a number of entries covering six separate fields. Although most of the reviewed works cover different aspects of the relationship between mining and Aboriginal peoples, an attempt was made to expand and include general works on mining and on experiences in other industries and countries.

Four entries are included in the section on General Works. Two cover the socio-economic impacts of northern resource projects and two are the proceedings of different seminars on employee relations in mining and on Native participation in mining.

One entry is included in the Employment and Training section. This study looks at the effects of rotational employment in the northern petroleum industry on one Inuit community.

The Business Opportunities and Investment sections contain a number of studies, reports and articles which look at different aspects of the entrepreneurial opportunities in resource industries available to, and taken by Aboriginal people in Canada and the United States.

A section entitled Other Bibliographies contains one entry on labour, employment and training in Canada's north and represents an important source document for those interested in this topic.

The final section in this bibliography, Single-Industry Communities contains one entry which examines this issue in British Columbia.

The Sub-committee will continue to update all sections of the bibliographic listing.

2.2 Maps - Aboriginal Communities/Reserves in Relation to Operating Mines

One of the original premises under which this study was begun in 1989, was that almost one-half of the Aboriginal people in Canada live in rural areas, most of which could be described as remote or isolated. The premise continued that it was in these areas where most of the country's mineral developments were found. The maps in this section graphically demonstrate the spatial relationship between Aboriginal communities/reserves and operating mines (p. 19).

There are a total of 2,248 Indian Reserves in the country. Of these 1,478 or 66% are unpopulated. The maps also locate

communities that have been identified by Statistics Canada and/or the Department of Indian Affairs and Northern Development as being Aboriginal.[2]

The first map of this series shows the location of all unpopulated Indian Reserves. Because of the large number of unpopulated Indian Reserves located in British Columbia, a separate map has been included. The other maps show, on a provincial or regional basis, the location of both operating mines and populated Aboriginal communities/reserves.

Providing a graphic demonstration of the spatial relationship between operating mines and the Aboriginal population, the maps allow the mineral industry companies to identify the location of Aboriginal communities or reserves. The unpopulated reserves have been included in order to remind companies that caution may be needed when entering an otherwise seemingly unused area.

As indicated in Addendum A of Appendix B (p. 33), the data system from which the mining aspect of these maps was created includes a great deal of other valuable information.

This is a new data system and the Sub-committee is aware that some individual communities may be missing. However, work will be continuing to upgrade the data bank for the maps.

2.3 Checklist to Assist Mineral Companies Operating On or Near Aboriginal Lands

Many mining companies are interested in developing good contacts with Aboriginal peoples in the areas in which they operate. However, many companies are not well enough informed on the Aboriginal community to be certain of how they should initiate contact. In addition, the companies are not sure of what they have to know or what they should tell the people. With this in mind, a checklist was developed to incorporate as many of their questions as possible.

It is felt that if a company follows the instructions provided in the checklist, completes as many of the questions as possible, builds upon them and continues effective communication as the project proceeds, contact between the company and the local community will be positive.

Also included as part of the checklist are two separate lists. The first covers Aboriginal and governmental organizations, with telephone numbers, that companies seeking further information may contact (p. 41). The second lists Native and other newspapers

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[2] Definitions used in the development of these maps are found as Addendum A of Appendix B (p. 33).

that a company may use to impart information about their project to local Aboriginal people (p. 43). This second list may also be used by companies that wish to advertise job openings directly to the Aboriginal communities.

2.4 Summary of Socio-economic Agreements

One of the more common instruments used by governments, mining companies and Aboriginal communities to ensure that proposed mineral projects provide maximum benefits to the local population, is the socio-economic agreement.

The reasons that a company enters into a socio-economic agreement may vary. Some do so on a strictly voluntary basis (i.e. because the company is convinced that this is the best policy), whereas others enter into an agreement because it is a government requirement.

As with other aspects of the relationship between the mineral industry and Aboriginal people, many companies are unsure of how to develop an agreement or what should go into one. In some instances companies have contacted a government office seeking guidance with respect to the development of a socio-economic agreement. When this has happened, the government office has generally referred to past agreements and suggested that the company consider the various clauses found in them.

In order to assist those who may be involved in the development of socio-economic agreements in the future, a consolidation of existing agreements has been developed. The summary, found in Appendix D (p. 49), is designed to be nothing more than a guide. There are many sections in the summary that are common to most of those that were analyzed and there are sections which may be found in only one or two of the agreements. It is highly unlikely that any single socio-economic agreement would contain all of the sections found in this summary as each agreement will be tailored to suit the particular situation.

Individual jurisdictions have different requirements regarding the necessity for, and use of, socio-economic agreements. In order to assist those seeking more information on the requirements, they have been summarized in Addendum A (p. 61). For more specific information, the various mining departments should be contacted.

2.5 Case Studies

The Phase I Report presented a number of case studies of mining companies that had, over the years, developed a reputation as being particularly strong in their relationship with the Aboriginal people. The five case studies in this report cover a number of different examples of programs/policies designed to improve the well-being of Aboriginal peoples.

The first case study outlines the recent initiative undertaken by the Tahltan Tribal Council of northwestern British Columbia to develop their own mining training centre (p. 65). It is the desire of the Tahltan people to benefit as fully as possible from mining developments in their traditional homeland and to participate in the developments. The training centre is their response to the potential that mining offers them.

One case study outlines the broad range of innovative mining training programs that have been developed in the past few years in Saskatchewan (p. 71). Some of the programs were developed by governments but others are company initiatives. There is a recognition that not all training programs work in all cases.

One of the case studies outlines the training program that was developed in Manitoba as part of the huge Limestone Hydro Project on the Nelson River (p. 77). It is noted that, as a result of the training program, the northern labour force (primarily Aboriginal) changed from having virtually no skilled tradespersons in 1984 to having over 1000 persons registered in apprenticable trades by 1990. A second case study from Manitoba provides information on the Canada-Manitoba Northern Development Agreement (1982-1989) which was designed to further the economic well-being of those people (especially Natives) who resided in the northern section of the province (p. 81).

The last case study outlines recent initiatives in northern Ontario designed to assist the Aboriginal people achieve Self-Government (p. 83). The effect of recent developments in Ontario (and especially the 1990 Interim Measures Agreement signed between the Governments of Ontario and Canada and the Nishnawbe-Aski Nation (NAN)) on the provincial minerals industry are highlighted.

2.6 Mineral Associations' Involvement with Aboriginal People

The many organizations dedicated to promoting the mineral industry in Canada were asked to provide information on any on-going initiatives designed to increase Aboriginal peoples knowledge of, or participation in, mining. This list may not capture all initiatives but it does provide concrete examples of what can be done. The intent also is to provide contact points for those interested in obtaining further information.

2.7 Summary of Responses to Questionnaires on Aboriginal Participation in Mining

Questionnaires were distributed to selected mining companies and Aboriginal communities and reserves in participating jurisdictions across the country. The objective of the survey was to ascertain both the reality and the perception of the costs, benefits, barriers and opportunities related to all aspects of Native participation in mining. The results of the completed surveys (from 28 mining companies and 20 Aboriginal communities and reserves) are summarized in Appendix G (p. 95).

The summary provides the substance of the data and comments that were provided by the respondents.

2.8 Analysis of Responses to Questionnaires on Aboriginal Participation in Mining

It can be done! That is the main message gleaned from the completed surveys. Aboriginal people can make an economic contribution to mines and other mining operations and the employment and business opportunities afforded to Aboriginal communities and reserves by mines can be substantial.

However, the survey results do not say that all mines that are located in areas of high Aboriginal population concentrations can automatically attain a high rate of Aboriginal employment. The results indicate that, due to a blend of social and economic factors, it is a much more likely that the degree of participation of Aboriginal peoples will be higher at fly-in/fly-out operations than at townsite operations.

In particular, the work-rotation at fly-in/fly-out operations is more compatible with traditional Aboriginal lifestyles. The location of Aboriginal communities - closer to remote operations than southern pick-up points - also reduces transportation costs for the operator. The results also indicate that all operations can probably do better especially in the area of communications.

Appendix A

Selective Annotated Bibliography

APPENDIX A

SELECTIVE ANNOTATED BIBLIOGRAPHY

1. GENERAL WORKS

Baffin Region Inuit Association. Executive Summary Socio-Economic Impacts of the Nanisivik Mine on North Baffin Region Communities. Ottawa: Indian and Northern Affairs Canada, 1980.

An executive summary of the results of a study which evaluated the Nanisivik mine in terms of the effectiveness of its Native employment program and the impacts of mine employment on Inuit workers, their families and communities. The study was conducted by Dr. Charles Hobart. The summary is organized into brief sections covering: the purpose of the study; the Nanisivik mine operation; the sources of data analyzed; the Inuit interviews; the limitations of the study; the profile of the Inuit work-force; the Inuit workers' employment record; the wage income from the mine employment; effects perceived by the Inuit on their communities; reactions of workers, wives and children to the employment experience; effects on more traditional sources of livelihood; and the study's conclusions and recommendations.

Canada. Department of Indian and Northern Affairs. Native Participation in Mining. Proceedings of the Seminar on Native Participation in Mining, Yellowknife, March 18-19,1987. Yellowknife: 1987.

The seminar objective was to provide a forum for a discussion of the basic features of mineral exploration and development in the western NWT between representatives of Native organizations, the mining industry and the federal and territorial governments. This was intended to create a greater awareness in the mining industry of the interests of Native corporations in mining and provide Native organizations with a better appreciation of how to pursue their interests.

Complete transcripts are included of the papers, and ensuing discussions, presented at the seminar sessions which addressed the topics of: Mining in Canada and the NWT; Exploration and Development; The Economics of Development; Opportunities (Business and Employment); Government Support; Native Involvement; and Conclusions. Appendices contain a detailed agenda and a list of participants.

Dome Petroleum Limited, Esso Resources Canada Limited, and Gulf Canada Resources Inc. Environmental Impact Statement for Hydrocarbon Development in the Beaufort Sea-Mackenzie Delta Region, Volume 5: Socio-Economic Effects. 1982.

This report was a joint product of the three principal explorers for oil and gas in the Beaufort Sea region (Dome, Esso, and Gulf). Topics covered include the background of the Beaufort region; the types of communities in the region (traditional, transitional, and modern frontier); the traditional economy of the region; possible scenarios for the region with and without hydrocarbon development; effects of hydrocarbon development (increases in capital and human resources, growth of business, transportation needs, community problems, conflicts with Native harvesting, and government responsibilities); policies for development (current policies, long-term community and resource development, land use planning); Northern supply regions (Yukon, Great Slave Lake communities, Central Arctic, Eastern Arctic, and Keewatin); Inland Corridor communities; Parry Channel communities; Baffin Bay-Davis Strait Communities; and Alaska. A fundamental theme of the report is the development of oil and gas resources of the Beaufort Sea "without significantly affecting the lifestyle of northern peoples or the environment on which these peoples depend." References and appendices are included.

Wojciechowski, M.J., ed. Employee Relations Initiatives in Canadian Mining. Proceedings of the Fourth CRS Policy Discussion Seminar. Kingston: Centre for Resource Studies, 1979.

The seminar focused on: important factors in employee recruitment and retention; community types and lifestyles preferred by employees; what types of employees are required; and, how employees are best motivated and provided with a feeling of being a stakeholder in the firm and the mining community.

Proceedings include the papers presented as well as a digest of participants' discussions on initiatives already taken to deal with the areas of concern and new initiatives which would improve employee relations in Canadian mining. Appendices provide a list of participants, the seminar program and profiles of the authors.

2. EMPLOYMENT AND TRAINING

Hobart, Walsh And Associate Consultants Ltd. Rotation Employment of Coppermine Inuit Men: Community Perspectives and Effects. For Esso Resources Canada Limited, Aquitaine Co. of Canada Ltd. and Canada Cities Services Ltd. Edmonton: May, 1978.

This report presents the results of a study of the effects of employment with Gulf Oil Canada on Coppermine, a predominantly Inuit settlement of about 800 people located on the Arctic coast, 600 kilometres north of Yellowknife. During the winters of 1972-73 through 1976-77, Gulf employed between 54 and 90 men from Coppermine in its oil exploration activity in the Mackenzie Delta. The emphasis in the study is on the assessment of the broad and long-term consequences on the community and its residents of these high-employment years.

The report chapter headings are: Executive Summary; Purpose and Methodology; Background: The Geographical and Historical Setting and the Origins of the Gulf Employment; Community Perceptions of the Employment Program; Effects of the Employment on Traditional Sources of Livelihood in Coppermine; Social Costs of the Rotation Employment; The Reactions of the Gulf Workers and Their Wives; Lessons of the Employment Experience: The Mature Respondents; and, Lessons of the Employment Experience: The Young People. References are included.

3. BUSINESS OPPORTUNITIES

Bankes, Nigel. Resource-leasing Options and the Settlement of Aboriginal Claims. Canadian Arctic Resources Committee, 1983.

This study explores the issue of land claim settlements, particularly in Canada's North, as they relate to resource development. The study's four main purposes are: to examine some of the aspects of title to land and resources that may be negotiable as part of the settlement of land claims; to indicate some of the more innovative arrangements that have been established by Aboriginal groups and resource companies elsewhere in the world; to present an overview of resource-leasing options that would be available to Aboriginal groups should they decide to permit development of lands transferred to them as a result of the settlement of Aboriginal claims; and, to indicate matters that still may be negotiable on the basis of proprietary right, even if the Aboriginal group has no right to veto resource or other development.

The study is divided into five parts. Part I, "Native Rights", explains the nature of proprietary and legislative

rights, and describes the land claims in Canada's North, and the federal response to the claims, as of 1983.

Part II, "Resource Agreements in the Third World", covers three types of resource agreements reached between multinational corporations and developing countries (concessions, joint ventures, and service and production-sharing contracts), and the possible application of each type to the situation in Canada.

Part III, "Mineral Leasing Policies on Native Lands", contains three chapters: "The United States--The Lower 48: Parallels for the Canadian North" (including examples of negotiated leases such as the Navajo-Exxon uranium lease), "Non-renewable Resource Development on Canadian Indian Lands within the Provinces", and "Native Economic Benefits from Resource Developments without Proprietary Rights" (including examples of employment agreements and equity participation).

Part IV, "Three Modern Settlements: Northern Territory (Australia), Alaska (U.S.A), and James Bay (Quebec)", presents 3 case studies: Australian uranium mining and the Aboriginal Land Rights (Northern Territory) Act of 1976; the Alaska Native Claims Settlement Act of 1971 and the North Slope Borough; and the James Bay and Northern Quebec Agreement of 1975.

Part V contains the author's conclusion, a glossary, a selection of laws and regulations adopted pursuant to the James Bay and Northern Quebec Agreement, and a bibliography.

Canada Employment and Immigration Advisory Council. Innovative approaches to enterprise development: a lever for employment growth. Interim report presented to the Minister of Employment and Immigration, May, 1988.

This report, part of a larger study on full employment, focuses on the role of enterprise in job creation and discusses some original approaches to the stimulation of enterprise activity. Locally-created economic development projects are recommended as a viable solution to declining employment in large- and medium-sized firms, and the federal government is encouraged to support communities and individuals toward that end.

The topics covered include: the impact of economic restructuring on employment (e.g., growth in particular sectors and occupational trends 1978-1986); prospects for future employment growth; obstacles to enterprise establishment (lack of management skills, scarcity of appropriate financing, marketing know-how, changing technology, total tax burden, government regulation, shortage of qualified labour, and recruitment and retention

of staff); innovative approaches to enterprise development; and, conclusions and recommendations.

Appendices I-III provide examples of programs and initiatives from across Canada which support enterprise development, as well as a number of programs aimed at particular target groups; a list of organizations and individuals consulted; and a list of conferences and forums attended. Appendix IV consists of a bibliography, and Appendix V of a list of periodical articles.

Inuit Tapirisat of Canada. Working Group on Inuit Participation in the Canadian Aboriginal Economic Development Strategy: Final Report. March, 1990.

This report was produced by a working group comprised of representatives from each of the six Inuit regions: Inuit Tapirisat of Canada (ITC); Pauktuutit Inuit Women's Association; Atii Training Inc.; Arctic Co-operatives Ltd.; and the federal departments of Indian Affairs and Northern Development, Employment and Immigration Canada, and Industry, Science and Technology. It presents a plan for developing and implementing three main types of economic services in Inuit communities: business development services for Inuit individuals and organizations; human resource development services to assist with training; and, financial services, both personal and commercial.

The goal of Inuit Community Economic Development Services (ICEDS) is to assist Inuit communities with mobilization of human resources and progression towards economic self-reliance and self-sufficiency. The needed services will be delivered by regional Community Economic Development Organizations (CEDO) that take into account each region's particular needs and have the flexibility to compensate for varying existing deficiencies in organizational infrastructure. As well, the ITC will establish a national subsidiary to support and co-ordinate the CEDOs, focusing on issues common to all regions, and efficient sharing of resources. Community consultation is emphasized as part of the process of refining the strategy, in order to maintain information flow about current levels of community development, available resources, and the needs of women in economic development.

The report includes a description of current Inuit organizational infrastructure at the national and regional levels, a plan to integrate the Inuit Community Economic Development Program with existing government services, and detailed operational budgets for year one. Appendices include the working group's draft action plan (January 1990) and an implementation schedule for year one of ICEDS.

4. INVESTMENT

Cohen, Daniel. "Tribal Enterprise", Atlantic, Vol. 264 No. 4, October 1989.

This article describes several successful entrepreneurial ventures (e.g., factories, joint ventures, on- and off-reserve investment, small businesses) undertaken by American Indian tribal councils, as well as some of the existing obstacles to such development. Beginning with a discussion of the highly profitable sale of a cement plant by the Passamaquoddy Indians of Maine in 1988, Cohen briefly reviews the role of the Bureau of Indian Affairs in the economic development of American reservations, and describes the current situation under the Bush administration. Both large-scale corporate projects and small business development (such as is supported by The Seventh Generation Fund, a California-based foundation) are described as possible approaches to future development on reservations. Two obstacles to Indian entrepreneurship are emphasized: dissension within tribes, and uncertain federal policies.

5. OTHER BIBLIOGRAPHIES

de la Barre, Kenneth et al. A Bibliography on Labour, Employment and Training in the Canadian North: Some Important Issues. Prepared under the auspices of the Committee On Northern Population Research. ASTIS Occasional Publication No.8, May 1983.

This bibliography focuses on population-related material concerned primarily with labour, employment and training issues in the Canadian North, with limited references to Alaska and other areas. The subject matter covers a wide range of scientific disciplines and reflects the extensive literature that describes the economic impacts of large energy and mineral extraction projects, particularly as they affect the training and employment of northerners. Subject matter spans the period from 1970 and earlier to 1983. The literature covered includes material published in English, French and Inuktitut.

6. SINGLE-INDUSTRY COMMUNITIES

Porteous, J. Douglas. "Single Enterprise Communities" British Columbia: Its Resources and People. Western Geographical Series Volume 22, Charles N. Forward, ed. Department of Geography, University of Victoria, 1987.

This paper describes the social and geographical characteristics of British Columbia's single enterprise communities, and provides a theoretical model for the

effective regional planning of future communities in isolated areas. A concise history of the development of company towns is followed by a discussion of the location, population age-sex structure, amenities and various inadequacies of company towns as perceived by the residents of these communities. A similar discussion of instant towns is also presented. Porteous' model for regional planning consists of central cities with a number of zones surrounding them, the outermost zones overlapping. Each zone is measured by the commuting time needed to reach the central city, and a variety of community types for each zone is recommended. Flexibility of planning, depending upon geographical and social considerations, is emphasized as a key factor in the success of such communities. A bibliography is included.

Appendix B

Maps

Aboriginal Communities/Reserves

in Relation to Operating Mines

APPENDIX B

MAPS
ABORIGINAL COMMUNITIES/RESERVES IN RELATION TO OPERATING MINES

1. INTRODUCTION

The maps found in this section have been prepared in order to show the spatial relationship between operating mines in Canada and centres of Aboriginal populations namely Indian Reserves and other settlements identified, based upon population, as being Aboriginal communities[3].

Three main uses for the maps found in this section have been identified:

i. To show mining companies that are unfamiliar with an area approximately where nearby reserves are located
ii. To inform mining companies of the possibility that there may be unpopulated Indian Reserve(s) located in an area that they are interested in, and
iii. To identify, by population size, sources of potential employees.

Further information on the communities/reserves located on the following maps may be obtained through contacting the organizations listed in Addendum A to Appendix C (p. 41) of this report.

2. OPERATING MINES

The seven maps showing populated Indian Reserves and Aboriginal Communities also contain the location of a total of 175 operating mines. The mines, found in all regions of Canada, include those producing precious metals, base metals, uranium, potash and coal.

3. INDIAN RESERVES AND ABORIGINAL COMMUNITIES

There are a total of 2,248 Indian Reserves in the country. These Indian Reserves, approximately 66% of which are unpopulated, are located across the country with particularly large concentrations (especially of unpopulated ones) in British Columbia. Many of the reserves are located in remote areas. In addition, Statistics Canada and the federal Department of Indian Affairs

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[3] The definitions for Aboriginal communities used in this report are found in Addendum A of this section (p. 33).

and Northern Development have identified a large number of other communities, many in northern areas, as Aboriginal communities.

The unpopulated Indian Reserves have been separated into two maps; one showing all of Canada and a second showing the location of the many unpopulated reserves in British Columbia.

The populated Indian Reserves and Aboriginal communities are shown on seven maps covering different provinces and regions of the country.

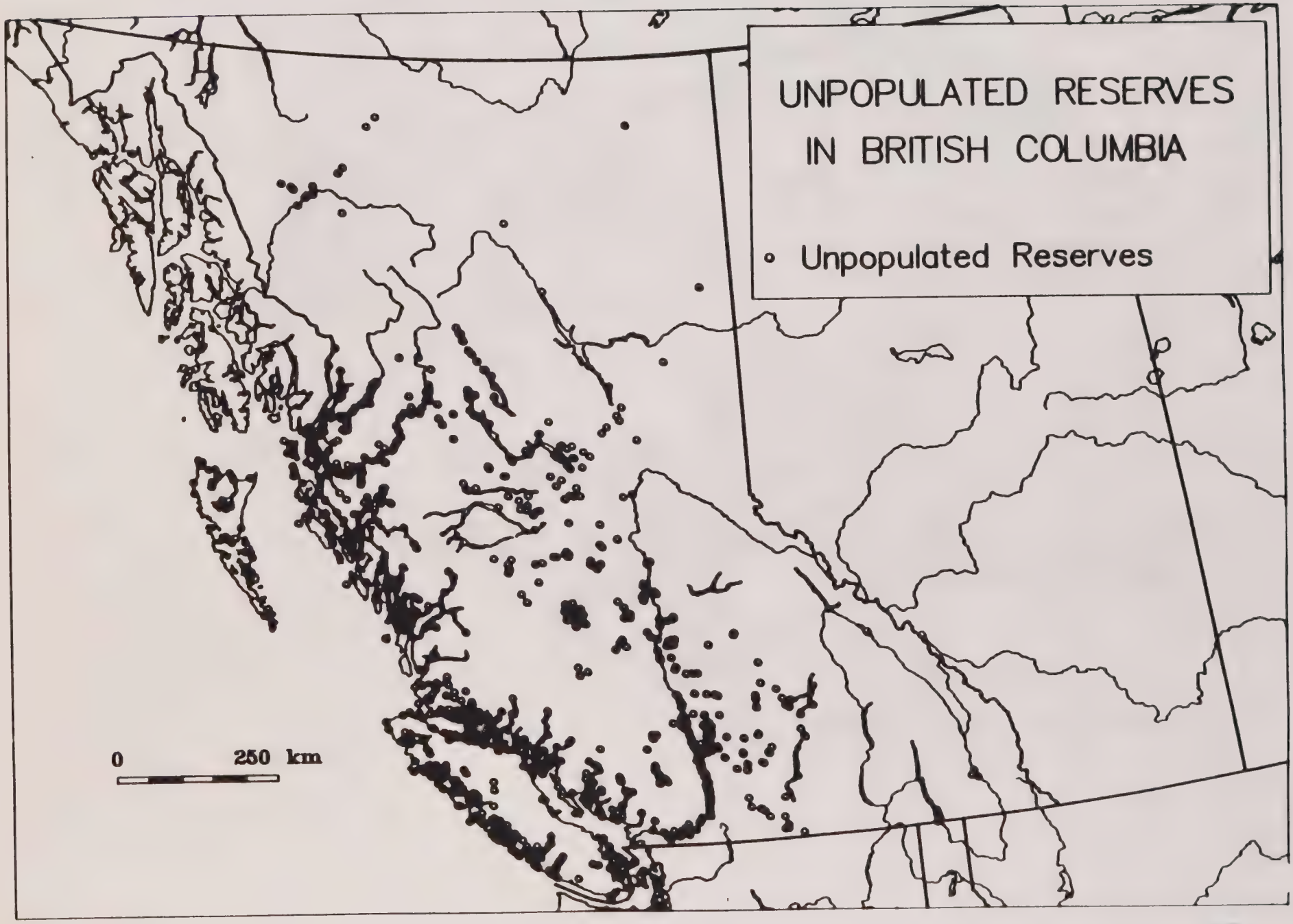
4. DATA USED

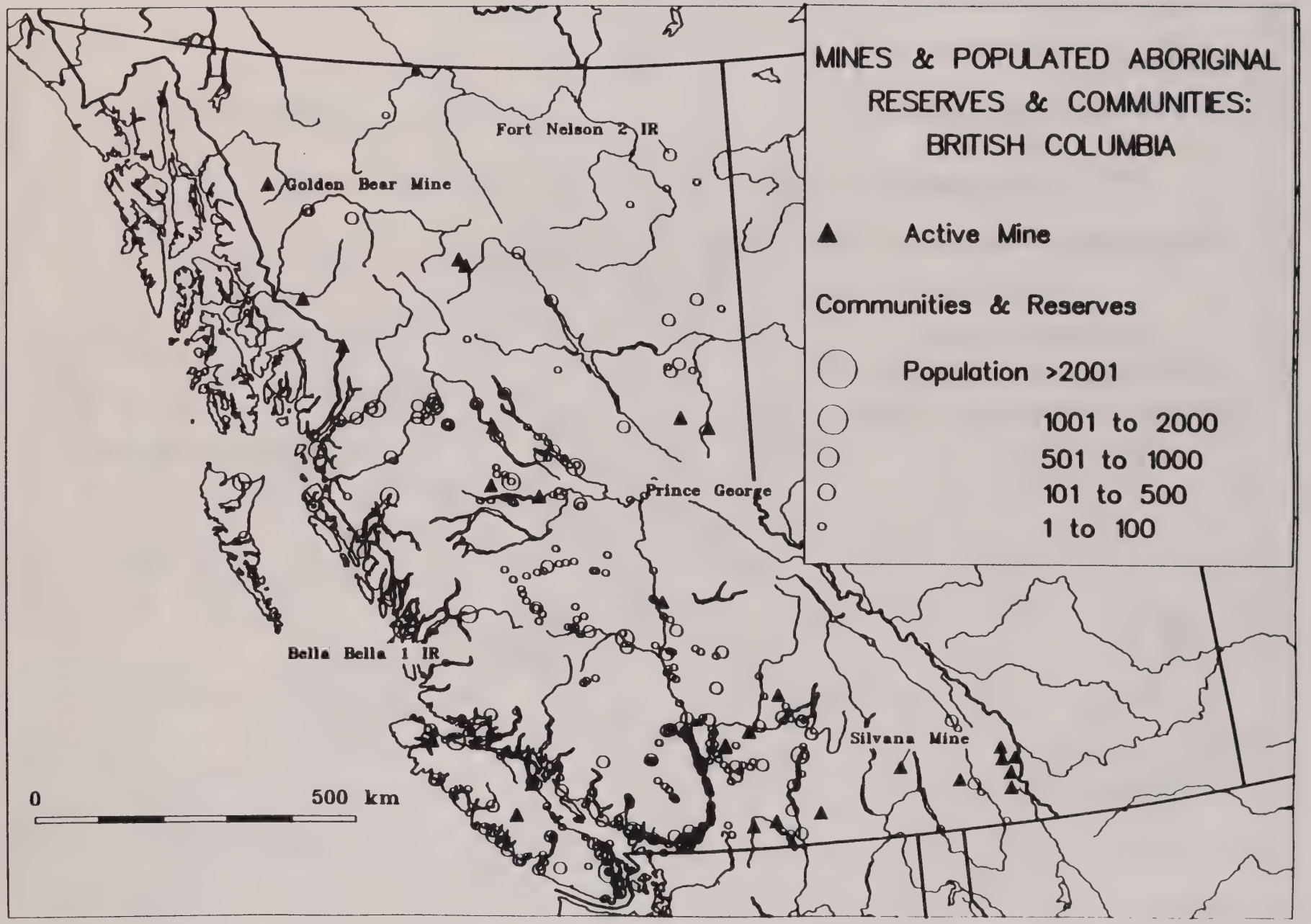
The data system from which the mining aspect of these maps was created includes a great deal of other information that can be accessed. Overall, this is a new data system and the Sub-committee is aware that some individual communities may be missing. However, work will be continuing to upgrade the data bank for the maps.

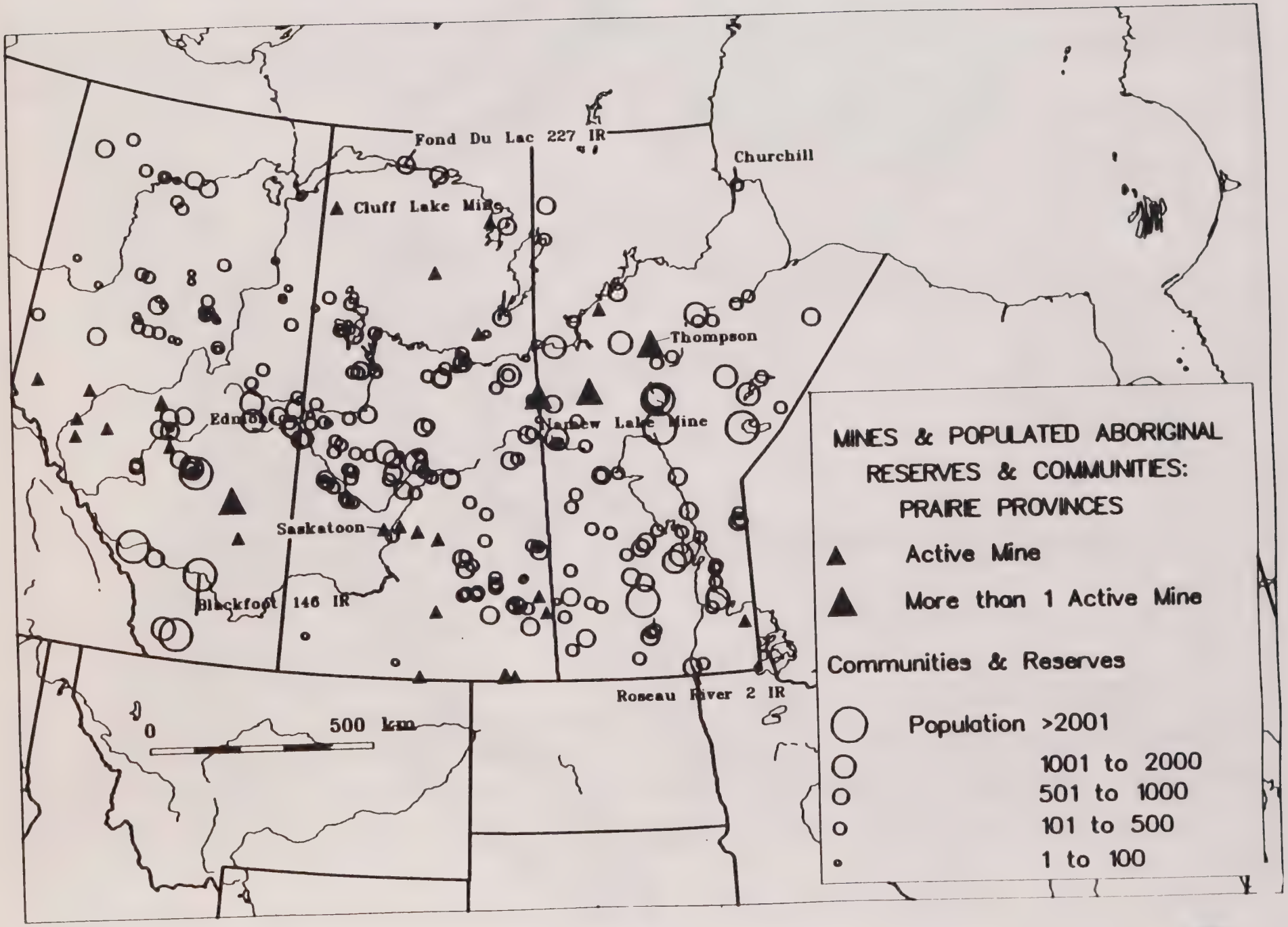
5. MAP AND DATABASE MANAGEMENT SYSTEMS

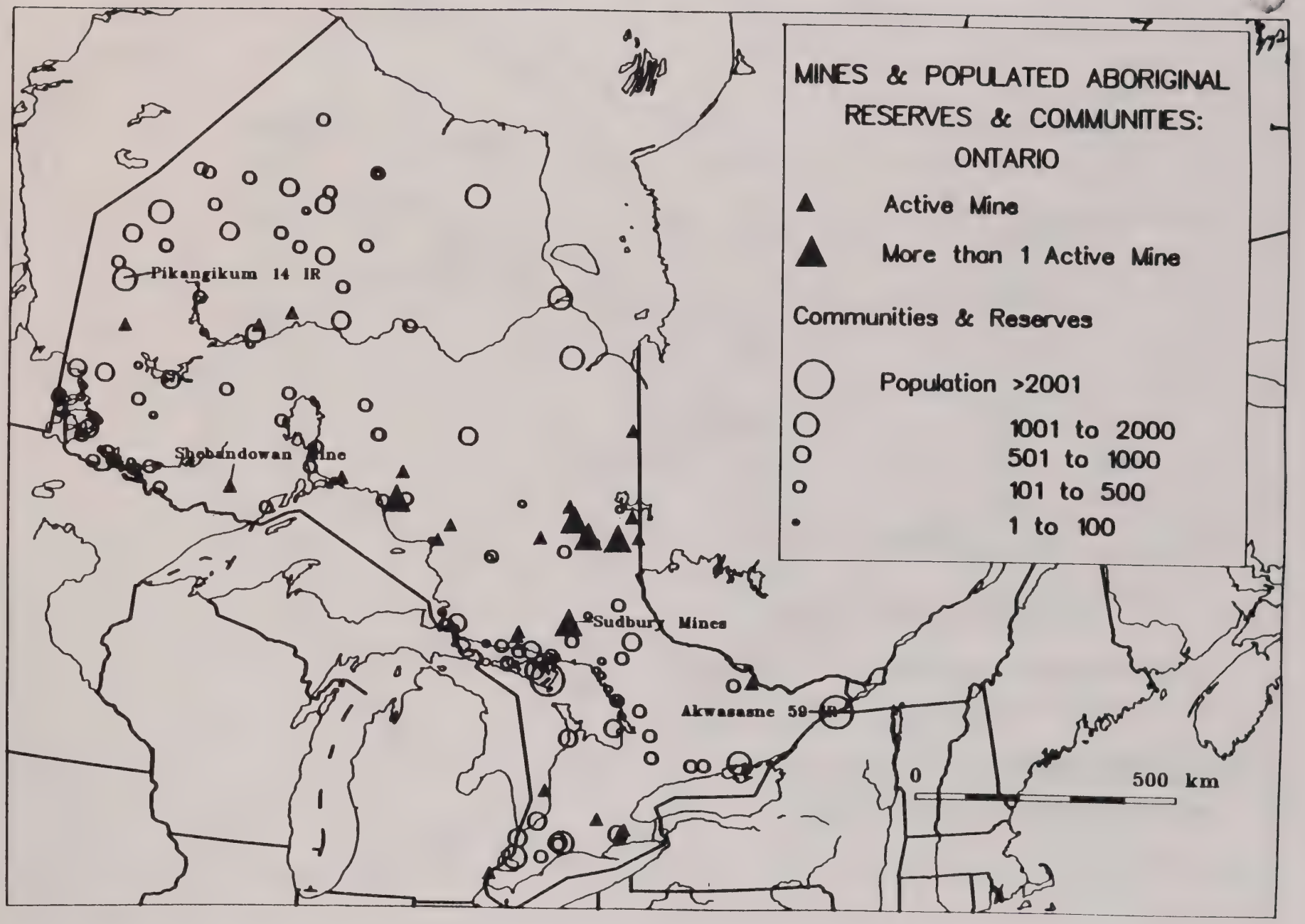
The maps in this section were developed using the QUIKMap mapping system combined with the inFOcus database management system.

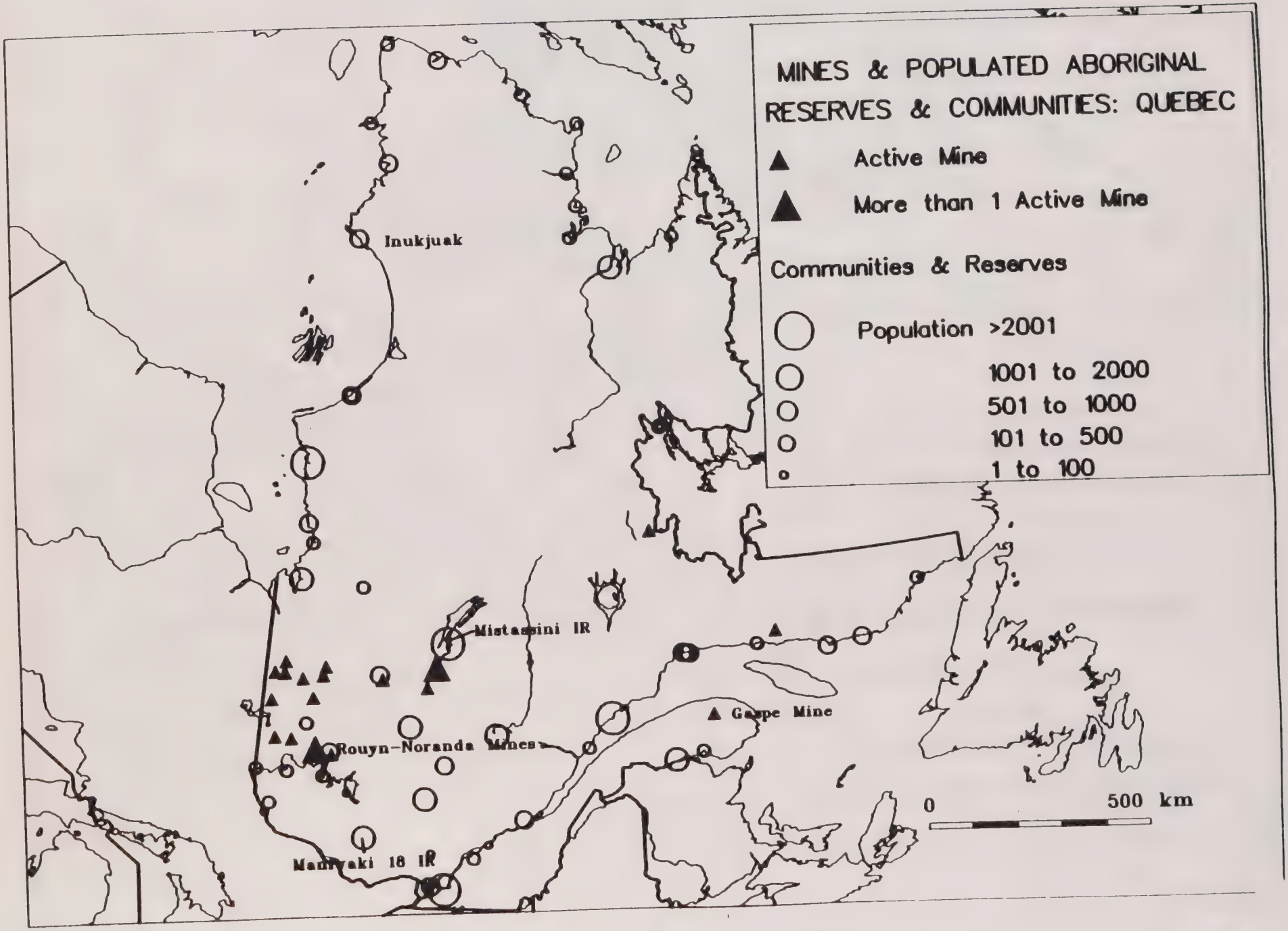

UNPOPULATED RESERVES
IN CANADA
Unpopulated Reserves
0
1000 km

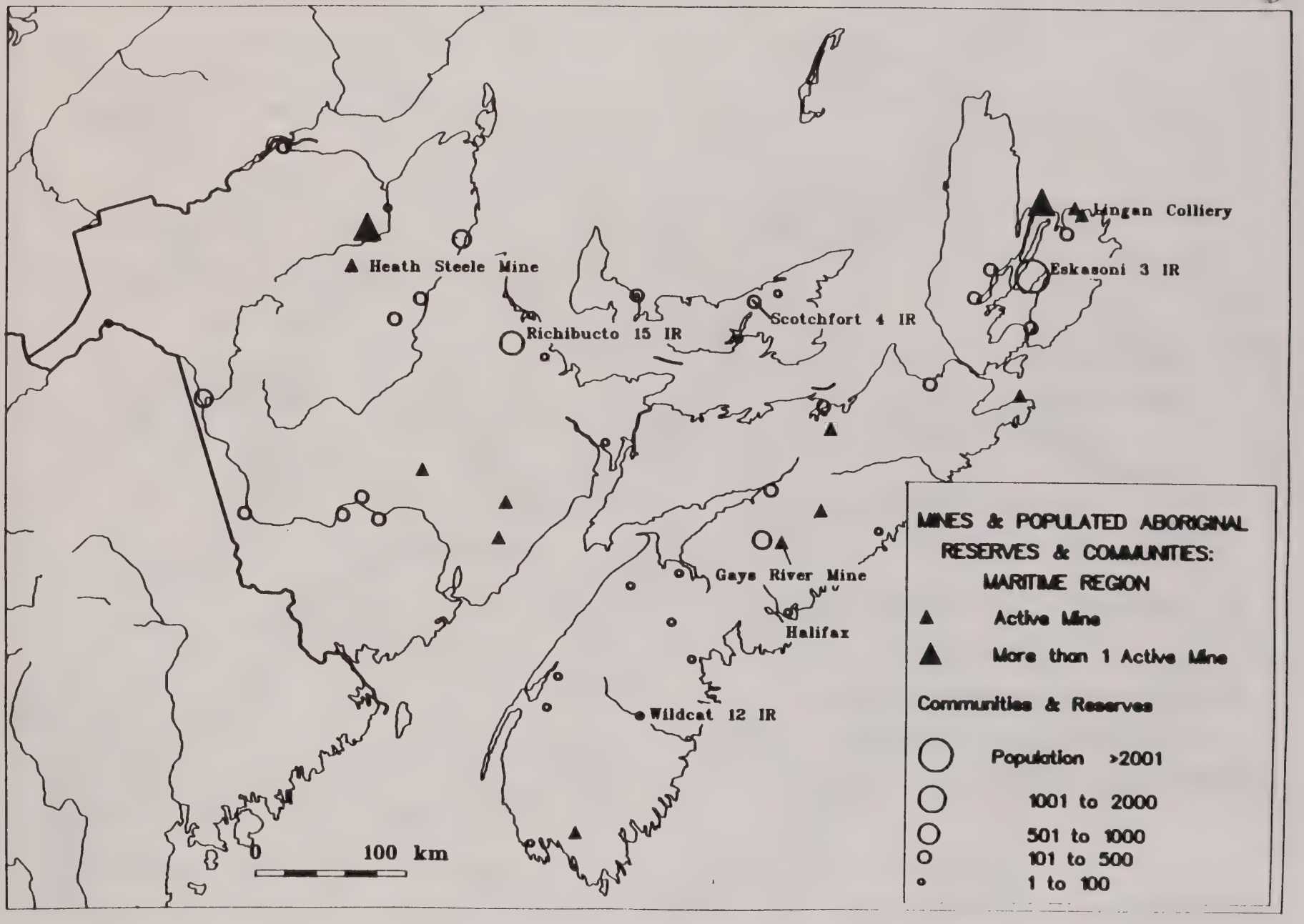

UNPOPULATED RESERVES
IN BRITISH COLUMBIA
Unpopulated Reserves
0
250 km

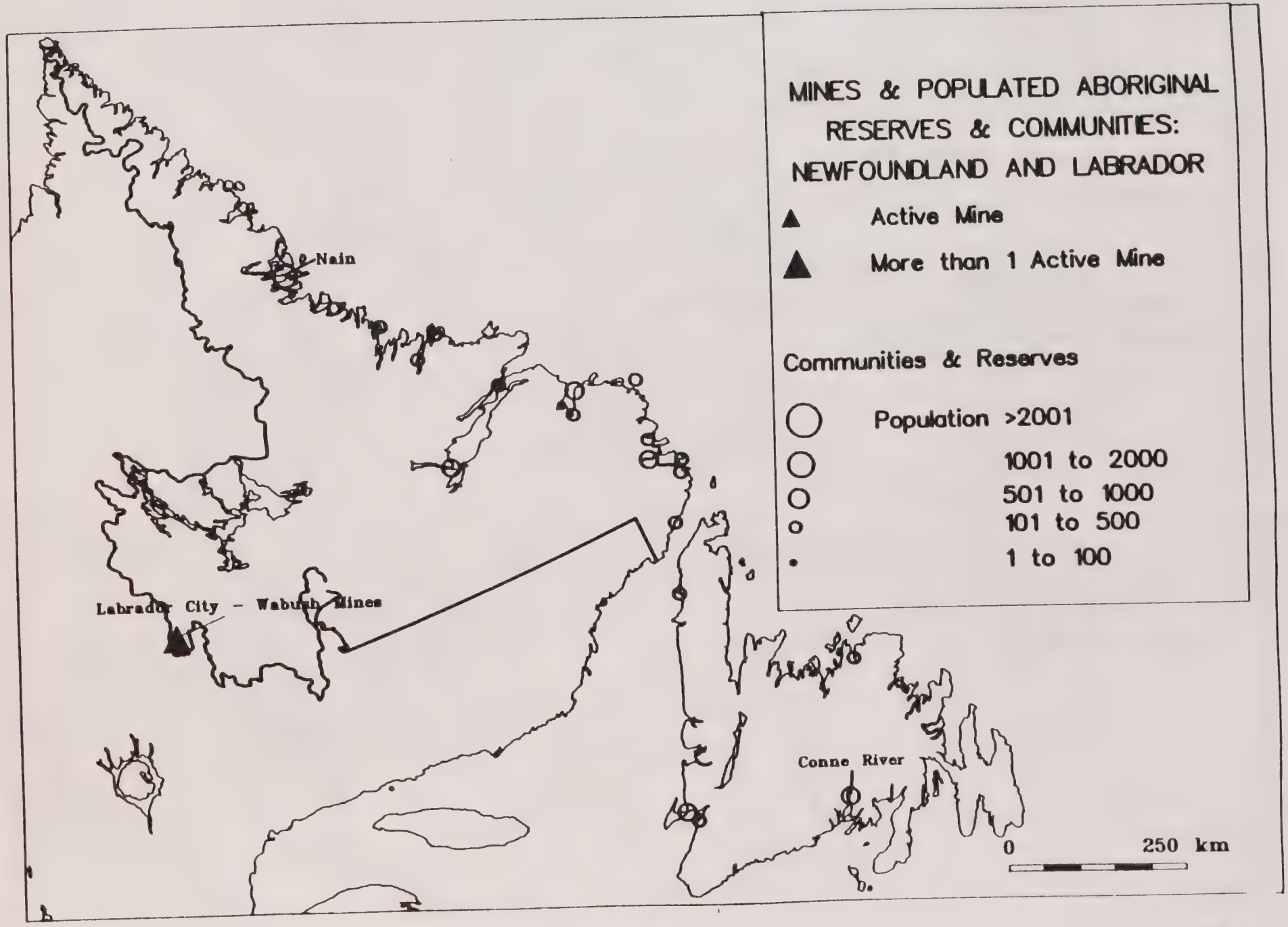

MINES & POPULATED ABORIGINAL RESERVES & COMMUNITIES: BRITISH COLUMBIA
Active Mine
Communities & Reserves
Population >2001
1001 to 2000
501 to 1000
101 to 500
1 to 100
Fort Nelson 2 IR
Golden Bear Mine
Prince George
Bella Bella 1 IR
Silvana Mine
0
500 km

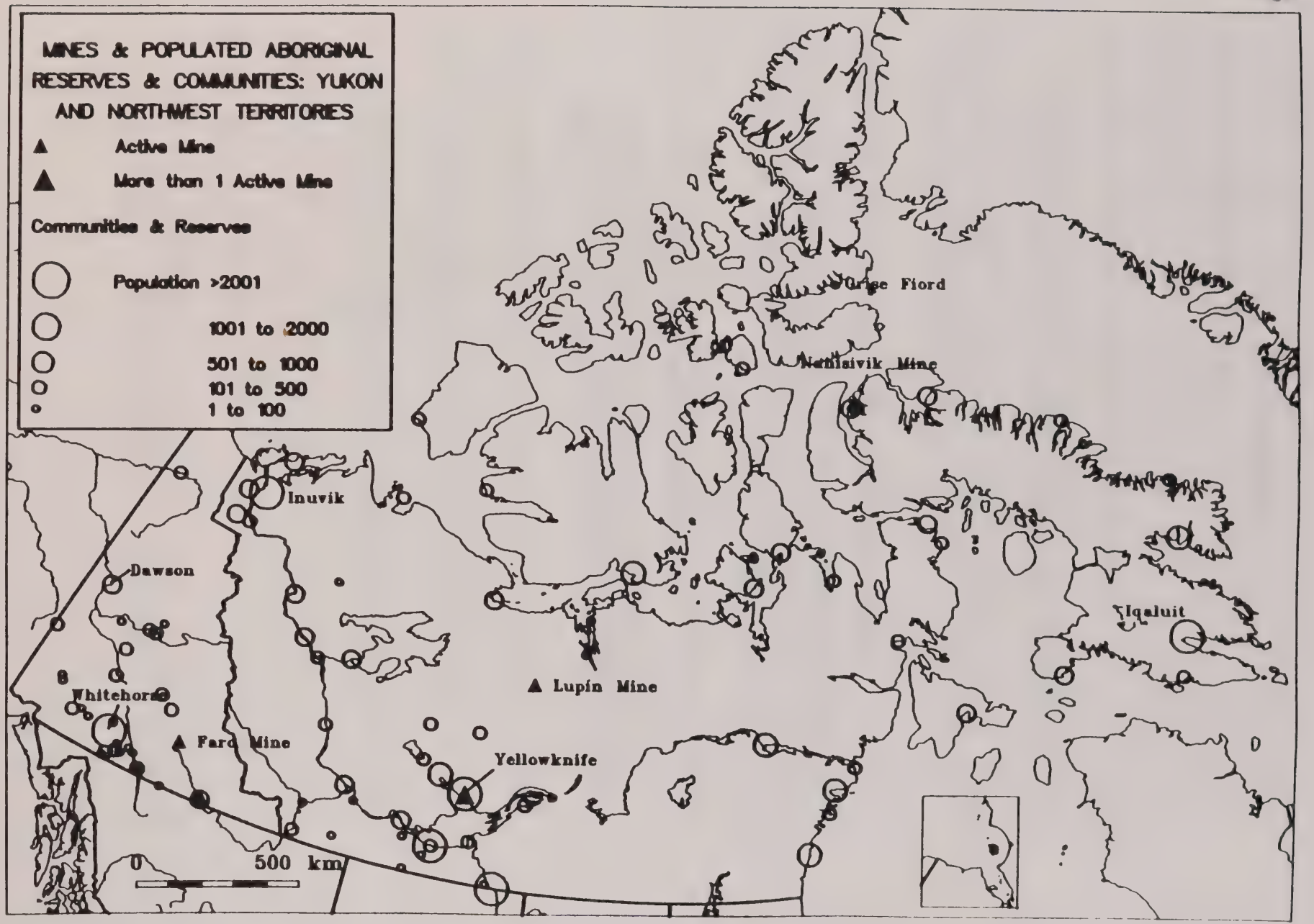

Fond Du Lac 227 IR
Churchill
Cluff Lake Mine
Thompson
Edmonton
Namew Lake Mine
Saskatoon
Blackfoot 146 IR
Roseau River 2 IR
0
500 km
MINES & POPULATED ABORIGINAL RESERVES & COMMUNITIES: PRAIRIE PROVINCES
Active Mine
More than 1 Active Mine
Communities & Reserves
Population >2001
1001 to 2000
501 to 1000
101 to 500
1 to 100


MINES & POPULATED ABORIGINAL RESERVES & COMMUNITIES: ONTARIO
Active Mine
More than 1 Active Mine
Communities & Reserves
Population >2001
1001 to 2000
501 to 1000
101 to 500
1 to 100
Pikangikum 14 IR
Shoal Lake 39 IR
Sudbury Mines
Akwesasne 59 IR
0
500 km


MINES & POPULATED ABORIGINAL RESERVES & COMMUNITIES: QUEBEC
Active Mine
More than 1 Active Mine
Communities & Reserves
Population >2001
1001 to 2000
501 to 1000
101 to 500
1 to 100
Inukjuak
Mistassini IR
Gaspe Mine
Rouyn-Noranda Mines
Maniwaki 18 IR
0
500 km


Heath Steele Mine
Lingan Colliery
Eskasoni 3 IR
Richibucto 15 IR
Scotchfort 4 IR
Gays River Mine
Halifax
Wildcat 12 IR
0
100 km
MINES & POPULATED ABORIGINAL RESERVES & COMMUNITIES: MARITIME REGION
Active Mine
More than 1 Active Mine
Communities & Reserves
Population >2001
1001 to 2000
501 to 1000
101 to 500
1 to 100


MINES & POPULATED ABORIGINAL RESERVES & COMMUNITIES: NEWFOUNDLAND AND LABRADOR
Active Mine
More than 1 Active Mine
Communities & Reserves
Population >2001
1001 to 2000
501 to 1000
101 to 500
1 to 100
Nain
Labrador City - Wabush Mines
Conne River
0
250 km


MINES & POPULATED ABORIGINAL RESERVES & COMMUNITIES: YUKON AND NORTHWEST TERRITORIES
Active Mine
More than 1 Active Mine
Communities & Reserves
Population >2001
1001 to 2000
501 to 1000
101 to 500
1 to 100
Grise Fiord
Nanisivik Mine
Inuvik
Dawson
Whitehorse
Faro Mine
Lupin Mine
Yellowknife
Iqaluit
0
500 km

ADDENDUM A

SOURCES OF DATA USED FOR MAPS

MINES

The mines included on the maps were found in:

> Mineral Policy Sector of Energy, Mines and Resources' Mineral Deposit Information System (MINSYS). May, 1991.

The minerals included are coal, copper, gold, iron, lead, molybdenum, nickel, platinum, platinum group elements, potash, silver, tin, uranium and zinc. Only those mineral deposits defined as being recovered were used.

RESERVES/ABORIGINAL SETTLEMENTS/NORTHERN HAMLETS

When gathering the data for the maps, the provinces and territories were treated differently due to their inherent differences. All communities in the territories were included while in the provinces only Aboriginal communities were included.

In the provinces, the names and population figures of Indian reserves and communities were obtained from:

> Canada. Department of Indian and Northern Affairs, Lands,Revenues and Trusts. Schedule of Indian Bands, Reserves and Settlements. Ottawa: Supply and Services, 1990.

The population figures reflect the Indian population of the communities.

In the Northwest Territories, the names and populations of the communities were obtained from:

> Government of the Northwest Territories. Bureau of Statistics. Northwest Territories Population Estimates. June 1989.

The population figures reflect the total population of the communities.

In the Yukon the communities included are a consolidation of those found in:

> Canada. Department of Indian and Northern Affairs, Lands, Revenues and Trusts. Schedule of Indian Bands, Reserves and Settlements. Ottawa: Supply and Services, 1990.

Heming, R., ed. Yukon Data Book 1986-87. Whitehorse: Outcrop Ltd., 1986.

The population figures for reserves and Indian communities were obtained from the Schedule of Indian Bands, Reserves and Settlements and therefore reflect the Indian populations. The populations of other communities were obtained from Census Canada, 1986 and therefore reflect the total population of the communities.

Inuit communities were found in only two of the provinces, Quebec and Newfoundland. The names of communities were obtained from:

Canada. Energy, Mines and Resources. National Atlas Data Base Map Series: Canada - Indian and Inuit Communities. Maps NADM-2 and NADM-3. Ottawa: Supply and Services, 1984.

The population figures were based on Census Canada, 1986 and therefore reflect the total population of the communities.

The locations of the reserves/Aboriginal communities/northern communities were obtained from the sources listed below. In approximately 0.3% of the cases the communities which were to be included could not be located and were therefore omitted from the maps.

Canada. DIAND, Economic Development, Resource Development Directorate, Indian Minerals (West).

Northwest Territories Data Book 1990/91. Yellowknife: Outcrop Ltd., 1990.

Heming, R., ed. Yukon Data Book 1986-87. Whitehorse: Outcrop Ltd., 1986.

Canada. Energy, Mines and Resources, Surveys and Mapping Branch, Geographical Services Division. Gazetteer of Canada. Ottawa: Supplies and Services.

Alberta: 1988
British Columbia: 1985
Manitoba: 1981
New Brunswick: 1972
Newfoundland: 1983
Northwest Territories: 1980
Nova Scotia: 1977
Ontario: 1988
Prince Edward Island: 1990
Saskatchewan: 1985
Yukon: 1988

Government du Québec. La Commission de toponymique. Répertoire Toponymique du Québec 1987. Québec: Les Publications du Québec, 1987.

Appendix C

Checklist to Assist Mineral Companies Operating On or Near Aboriginal Lands

APPENDIX C

CHECKLIST TO ASSIST MINERAL COMPANIES OPERATING ON OR NEAR ABORIGINAL LANDS

In the last few years, many companies involved in the mineral industry have contacted governments and expressed a willingness to learn about, and communicate with, Aboriginal people.

The following checklist has been developed to provide interested companies with some guidance. Its purpose is to ensure that their contact with the Aboriginal people will be as productive as possible.

These guidelines are applicable at all stages of mineral exploration, development and mine operation as well as closure. They should also prove helpful if a company becomes involved in a project at an advanced stage. In the event of a change of ownership, it is important that the lines of communication remain open.

For information concerning the Aboriginal people in the province/territory in which the mineral development is to be located, contact the Aboriginal and governmental organizations found in Addendum A (p. 41).

In order to assist companies wishing to either impart information concerning what they are doing or proposing to do, or to advertise job openings, the list of newspapers found in Addendum B (p. 43) has been developed. These newspapers are either published by Aboriginal organizations (e.g. Windspeaker in Alberta) or are circulated in areas with a large Aboriginal population (e.g. News/North in the Northwest Territories).

CHECKLIST TO ASSIST MINERAL COMPANIES OPERATING IN AREAS NEAR ABORIGINAL COMMUNITIES

Before commencing your operations and before initial contact, learn the rules and regulations (if any) which might affect your dealings with the Aboriginal people:

( ) provincial/territorial rules or regulations regarding Aboriginal people (e.g. is a formal socio-economic agreement or human resource plan required?)
( ) status of land claims - pending or settled
( ) effect, if any, of the land claim on what the company is planning
( ) is some other type of agreement in force which may affect your project (e.g. Nishnawbe-Aski-Nation Interim Measures Agreement)
( ) availability of government programs to encourage Aboriginal participation in your project

Before initial contact, learn about the local Aboriginal people:

( ) location of nearby reserves - populated or unpopulated
( ) location of nearby Aboriginal communities
( ) location of lands, or bodies of water, which Aboriginal peoples traditionally use
( ) who to contact (e.g. name of the Band Chief, Mayor, etc.)

Reasons to contact local Aboriginal people:

( ) common courtesy (e.g. your company wishes to explore or develop a site on or near the traditional land of the local Aboriginal people)
( ) to inform them of company plans
( ) to learn of their concerns about the project and consider how to mitigate them
( ) to ensure their understanding of the project
( ) to learn about the availability of local labour and businesses
( ) to learn about the need for and availability of training programs
( ) good business practice

Who to contact:

( ) given that the area of traditional pursuit may be extensive, you may have to meet with people from a number of Aboriginal communities
( ) initial contact should be made at the bureaucratic/political level:
- the Band Chief, Mayor, Band Council, Elders, etc.
- local economic development/employment officer

( ) contact should also be made with the general public:
  - public information sessions
  - town hall meetings or question and answer sessions
( ) utilize the local media, including the Aboriginal press (if available), to inform the community(ies) about what the company is doing or planning to do

What to inform the local people about:

( ) what the company is planning to do (e.g. explore, develop a deposit, purchase company, etc.)
( ) actual location of planned operation
( ) if known, discuss the proposed type of operation:
  - mineral being looked for or developed
  - type of mine (e.g. open-pit or underground)
  - type of accommodation (e.g. townsite or fly-in/fly-out)
  - size of labour force, education and skills required
  - location of hiring office
  - planned crew rotations or shift schedules
  - planned cross-cultural programs
( ) if you plan a pro-active Aboriginal hiring program, seek guidance from the community about a possible Native employment co-ordinator
( ) if a formal socio-economic agreement is not required think about the advisability of entering into a voluntary one
( ) potential environmental problems or concerns and proposed mitigation measures (raise these on your own)

What to learn from the local Aboriginal people:

( ) the availability and make up of the local labour force
( ) the availability and nature of local businesses (e.g. potential sources of construction materials)
( ) would they like you to enter into a voluntary socio-economic agreement
( ) their concerns about possible social impacts
( ) their concerns about possible environmental impacts

Continue the contacts started in the earliest stages over the life of the project:

( ) also, if taking over from another company
( ) to ensure that the good relationship developed at the beginning continues

ADDENDUM A

SOURCES OF INFORMATION CONCERNING ABORIGINAL PEOPLE

For further information concerning the Aboriginal people in the province/territory in which the mineral development is (to be) located, the following agencies may be contacted:

National Headquarters of Aboriginal Organizations

The Assembly of First Nations, Ottawa	(613) 236-0673
The Inuit Tapirisat of Canada, Ottawa	(613) 238-8181
The Metis National Council, Saskatoon	(306) 373-8855
The National Association of Friendship Centres, Ottawa	(613) 563-4844
The Native Council of Canada, Ottawa	(613) 238-3511
The Native Women's Association of Canada, Ottawa	(613) 236-6057

Federal, Provincial and Territorial Government Departments

Department of Indian Affairs and Northern Development

Headquarters:	Hull, Que.	(819) 997-0380
Regional Offices:	Amherst, N.S. (Atlantic Canada)	(902) 667-3818
	Quebec City, Que.	(418) 648-7562
	Toronto, Ont.	(416) 973-6215
	Winnipeg, Man.	(204) 983-6397
	Regina, Sask.	(306) 780-5945
	Edmonton, Alta	(403) 495-7046
	Vancouver, B.C.	(604) 666-5100
	Whitehorse, Y.T.	(403) 667-3314
	Yellowknife, N.W.T.	(403) 920-8282

Provincial/Territorial Departments

New Brunswick
Intergovernmental Affairs
Fredericton, New Brunswick (506) 453-2579

Ontario
Mines and Minerals Division
Ministry of Northern Development and Mines
Sudbury, Ontario (705) 670-7250

Manitoba
Manitoba Energy and Mines
Winnipeg, Manitoba (204) 945-6505

Manitoba Northern Affairs
Winnipeg, Manitoba (204) 945-0572

Saskatchewan
Indian and Metis Affairs Secretariat
Regina, Saskatchewan (306) 787-6250

Alberta
Native Services Unit
Edmonton, Alberta (403) 422-5925

British Columbia
Mineral Policy Branch
Ministry of Energy, Mines
and Petroleum Resources
Victoria, British Columbia (604) 387-3787

Yukon
Economic Development:
Mines and Small Business
Whitehorse, Yukon (403) 667-5384

Northwest Territories
Energy, Mines and Petroleum Resources
Yellowknife, Northwest Territories (403) 873-7086

ADDENDUM B

NATIVE/NORTHERN PUBLICATIONS SUITABLE FOR EMPLOYMENT ADVERTISEMENT

The following list of newspapers, newsletters and magazines was prepared for mineral development companies wishing to inform local residents, especially Aboriginal people, of employment opportunities or company activities.

This list is based upon a 1989 report of northern or Aboriginal publications available at the Department of Indian Affairs and Northern Development (DIAND) library. In order to capture recent changes within the Native press, publications on the DIAND list were contacted. The main criteria for inclusion as part of this list was whether they regularly published employment advertisements.

For further advertisement possibilities contact local tribal councils or Friendship Centres.

Each entry contains the following information: publication name, where published, publisher, frequency, language(s), prime circulation area, audience - if not specifically for Aboriginal people.

NEWFOUNDLAND/LABRADOR

Kinatuinamot Ilengajuk. Nain, Labrador: Labrador Inuit Association. Monthly. Inuktitut/English. Circulated primarily in Labrador. (Expected to return to print by August 1991).

Labradorian. Happy Valley - Goose Bay, Labrador: Robinson-Blackmore. Weekly. English. Circulated primarily in Labrador. Not specifically for Aboriginal people.

NOVA SCOTIA

Micmac Maliseet Nations News. Truro, N.S.: Confederacy of Mainland Micmacs. Monthly. English. Circulation primarily in the Maritime region and in Quebec.

Micmac News. Sydney, N.S.: Union of Nova Scotia Indians. Weekly. English. Circulated primarily in the Maritime Region.

NEW BRUNSWICK

Mal-1-mic News. Fredericton, N.B.: New Brunswick Association of Metis and Non-Status Indians. Quarterly. English. Circulated primarily in New Brunswick.

Miramichi Leader. Newcastle, N.B.: Cadogan Publishing Ltd. Weekly. English. Primarily local circulation.

Miramichi Weekend. Newcastle, N.B.: Cadogan Publishing Ltd. Weekly. English. Primarily local circulation.

QUEBEC

Alliance. Hull, Que.: Alliance autochtone du Quebec. Monthly. French/English. Circulated primarily in Quebec to Metis and Non-Status Indians.

Chewitan. Chibougamau, Que.: Cree Indian Centre of Chibougamau. Monthly. English. Primarily local circulation.

Indian Time. Roosenveltown, N.Y., U.S.A.: Akwesasne Communications Society. Weekly. English. Primarily local circulation.

ONTARIO

Council Fires. Blind River, Ont.: North Shore Tribal Council. Monthly. English. Primarily regional circulation.

Jibkenyan. Wallaceburg, Ont.: Walpole Island Council. Every two weeks. English. Primarily local circulation.

Kenora Daily Miner. Kenora, Ont.: Bowes Publishing. Daily. English. Primarily local circulation. Not specifically for Aboriginal people.

Tekawennake. Oshweken, Ont.: Tekawennake Publications. Weekly. English. Primarily local circulation.

Wawatay News. Sioux Lookout, Ont.: Wa-Wa-Ta Native Communications Society. Every two weeks. Oji-cree/English. Circulated primarily to Native communities north of Sioux Lookout.

MANITOBA

Nickel Belt News. Thompson, Man.: Precambrian Press. Weekly. English. Circulation primarily in northern Manitoba. Not specifically for Aboriginal people.

Opasquia Times. The Pas, Man.: New North Ventures Ltd. Twice weekly. English. Primarily local circulation. Not specifically for Aboriginal people.

Thompson Citizen. Thompson, Man.: Precambrian Press. Thrice weekly. English. Primarily local circulation. Not specifically for Aboriginal people.

Weetamah. Winnipeg, Man.: Mikisiw Printing. Every two weeks. English. Circulated primarily in Manitoba.

SASKATCHEWAN

Gold Belt Gazette. Creighton, Sask.: Eric Shaw. Twice weekly. English. Circulated primarily in Creighton and Flin Flon, Manitoba area. Not specifically for Aboriginal people.

La Ronge Northerner. La Ronge, Sask. Weekly. English. Circulated primarily in Northern Saskatchewan. Not specifically for Aboriginal people.

New Breed. Saskatoon, Sask.: Saskatchewan Native Communications. Monthly. English. Circulated throughout Canada.

North Battleford Optimist. North Battleford, Sask.: MacIntosh Publishing Company. Twice weekly. English. Primarily regional circulation. Not specifically for Aboriginal people.

Northwest Eagle. Meadow Lake, Sask.: Meadow Lake Printers Ltd. Monthly. English. Circulated primarily in Northwestern Saskatchewan.

Saskatchewan Indian. Saskatoon, Sask.: Saskatchewan Indian Media Corp. Monthly. English. Circulated primarily in Saskatchewan.

ALBERTA

Alberta Native News. Edmonton, Alta: 320754 Alberta Ltd. Monthly. English. Circulated primarily in Alberta.

Kainai News. Standoff, Alta: Indian News Media. Every two weeks. English. Circulated throughout North America as well as overseas.

Native Network News. Edmonton, Alta: Metis Nations of Alberta. Monthly. English. Circulated primarily in Alberta and western Canada.

Plains Cree Today. Saddle Lake, Alta. Monthly. English. Primarily local circulation, will be expanding regionally shortly.

Strathmore Standard. Strathmore, Alta: Bowweb Publishing Company. Weekly. English. Primarily local circulation. Not specifically for Aboriginal people although the Siksika News is regularly included as an insert.

Windspeaker. Edmonton, Alta: Aboriginal Multi-media Society of Alberta. Every two weeks. English. Circulated primarily in Alberta and Saskatchewan.

BRITISH COLUMBIA

Dakelh dustl'us. Prince George, B.C.: Carrier Sekani Tribal Council. Quarterly. English. Primarily local circulation.

Ha-shilth-sa. Port Alberni, B.C.: Nuu-chah-Nulth Tribal Council. English. Monthly. Circulated primarily in British Columbia.

Kahtou. Vancouver, B.C.: Kahtou Communications Inc. Monthly. English. Circulated primarily in British Columbia.

Native Voice. Vancouver, B.C.: Native Brotherhood of British Columbia. Every two months. English. Circulated primarily in British Columbia.

Northern Sentinel. Kitimat, B.C.: Mitchelle Press. Twice weekly. English. Primarily local circulation. Not specifically for Aboriginal people.

Prince Rupert Daily News. Prince Rupert, B.C. Daily. English. Primarily local circulation.

Secwepemc News. Kamloops, B.C.: Secwepemc Cultural Education Society. Monthly. English. Circulation focused on the central interior of British Columbia.

Sto:lo Nation News. Sardis, B.C.: Coqualeetza Center. Monthly. English. Primarily local circulation.

YUKON TERRITORY

Dan Sha. Whitehorse, Y.T.: Ye Sa To Communications Society. Monthly. English. Circulation primarily in the Yukon.

Klondike Sun. Dawson City, Y.T.: Literary Society of the Klondike. Monthly. English. Circulation primarily in the Yukon. Not specifically for Aboriginal people.

Whitehorse Star. Whitehorse, Y.T.: Whitehorse Star Ltd. Daily. English. Circulated primarily in the Yukon. Not specifically for Aboriginal people.

Yukon News. Whitehorse, Y.T.: Media North Ltd. Twice weekly. English. Circulated primarily in the Yukon. Not specifically for Aboriginal people.

NORTHWEST TERRITORIES

The Hub. Hay River, N.W.T.: Hub Publications Ltd. Weekly. English. Circulated primarily in the south Slave Lake region. Not specifically for Aboriginal people.

Inuvik drum. Inuvik, N.W.T.: Northern News Services. Weekly. English. Primarily local circulation. Not specifically for Aboriginal people.

L'Aquilon. Yellowknife, N.W.T.: L'Aquilon. Bi-weekly. French. Primarily local circulation. Not specifically for Aboriginal people.

Mackenzie Times. Fort Simpson, N.W.T.: CanArctic Graphics. Weekly. English. Circulated primarily in the Mackenzie Delta. Not specifically for Aboriginal people.

News/North. Yellowknife, N.W.T.: Northern News Services. Weekly. English. Primarily circulated in the Northwest Territories. Not specifically for Aboriginal people.

Nunatsiaq News. Iqaluit, N.W.T.: Nortext. Weekly. Inuktitut/English. Circulated primarily in the Eastern Arctic.

Slave River Journal. Fort Smith, N.W.T.: Cascade Publishing Weekly. English. Circulated primarily in the Western Arctic and Northern Alberta. Not specifically for Aboriginal people.

The Press Independent. Yellowknife, N.W.T.: D.M. Communications Ltd. Weekly. English. Circulated in the Western Arctic.

Tusaayaksat. Inuvik, N.W.T.: Inuvialuit Communications Society. Every two weeks. English/Inuvialuktun. Circulated primarily in the Western Arctic.

Yellowknifer. Yellowknife, N.W.T.: Northern News Services. Twice weekly. English. Primarily local circulation. Not specifically for Aboriginal people.

APPENDIX D

SUMMARY OF

SOCIO-ECONOMIC AGREEMENTS

APPENDIX D

SUMMARY OF SOCIO-ECONOMIC AGREEMENTS

1. INTRODUCTION

The following document is a consolidation of existing socio-economic agreements from various off-reserve[4] resource industries. It was designed to inform participants in natural resource development of the various methods available for the development of benefits agreements. It is intended to be a guide only.

The socio-economic agreement, which can be negotiated between the company, various levels of government and the community, attempts to enhance the economic climate of the local community[5] by encouraging its participation in the resource development. It provides opportunities to local business and residents for employment and training, business development and contracting services. The agreement also promotes growth and development of the local community through education, counselling and maintenance of traditional culture and lifestyles.

The requirements regarding the necessity for and use of socio-economic agreements are different in each jurisdiction. A synopsis of the different requirements is included in Addendum A (p. 61).

2. INTENT

The intent of the socio-economic agreement is to develop a framework that will facilitate efficient and effective use of resources by Canada, the province, the company and local residents in an effort to achieve a mutually beneficial social and economic benefits agreement. The intent clause can also include the justification of the proponents for the establishment of a socio-economic agreement.

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[4] It should be noted that only off-reserve agreements were consulted. Resource development on Indian reserves is subject to different resource legislation and regulation.

[5] The term local community was chosen to represent the population base nearest to the minesite. It is most relevant to, but not restricted to, residents of Canada's north and Native Canadians.

3. EMPLOYMENT AND TRAINING

The employment of the local residents by the resource development is, perhaps, the most direct economic benefit for both parties. The company is supplied with an immediate labour force, and the community is provided with a variety of employment opportunities. The establishment of employment and training programs and other special employment provisions further enhances the availability of local residents to the resource development. Provisions for employment and training were found in all of the agreements researched.

a) Recruitment

The company can develop a policy for the recruitment of employment candidates which gives priority to the local residents of the community. Recruiting from the area can be facilitated, where practicable, through local Canadian Employment and Immigration (CEIC) recruitment offices, community visits and public notices. Recruitment outside the local area may proceed after a local search, exploring the rest of the home territory/province, neighbouring territories/provinces, Canada and foreign countries.

The company can develop a policy to ensure that best efforts will be made to acquire a minimum percentage of the overall workforce from the local community. The company can ensure that the number of local residents employed will be limited only by the capacity of the labour force itself. For example, one company wanted to have a labour force consisting of 20% northern residents, while another company established a policy to hire 50% Inuit and 50% non-Inuit employees.

b) Training and Development

The company can develop a policy to ensure it will use best and reasonable efforts to develop and implement training programs to advance the skills and education of its employees.

The company can establish pre-operational and operational training programs for local residents who meet established educational, training and employment standards specific to the positions available and/or applied for.

The company can develop and implement on-the-job educational upgrading, technical training and apprenticeship programs for local residents, based on projected labour requirements.

The company can work with recognized educational institutions operating in the local region to design programs to meet employment requirements of the company and other regional employers.

The company can ensure that education and training will not be limited to facilitate employment solely within the company or its contractors.

The company can ensure that employee training and development is in accordance with the requirements of the territorial/provincial apprenticeship and tradesman programs, and will be credited towards certification or status recognized within the territory/province. Details of employment should be recorded with the territorial/provincial Department of Education in accordance with apprenticeship and tradesman education programs.

The company can negotiate with the territorial/provincial Department of Education to procure its assistance in the design and delivery of the company's training programs. The Department of Education can make available curriculum development and instructional material resources.

These programs are usually developed with the cooperation and assistance of the territory/province's Department of Education and other northern and Aboriginal employment programs.

c) Other Employment Provisions

1) Committee on Employment Opportunities

The company can ensure effective management of human resource policies by developing a committee on employment opportunities. The committee would be composed of representatives from each party interested or affected by the resource development: the company, local residents, government, union etc. The committee would be responsible for:

implementing and monitoring employment policies. The committee would conduct recruitment in local communities and would promote the employment opportunities for local residents.

ensuring that employment opportunities were made available firstly to local residents, and would coordinate personnel searches in other areas.

assisting in the development and implementation of training programs in response to labour requirements, and would monitor education, training and other employment benefits.

identifying and negotiating sources of government financial support for training programs and initiatives.

2) Aboriginal Employment Coordinator/ Liaison Officer

The company can employ a local Aboriginal person to be available as a resource in support of its Aboriginal programs and as a liaison to senior management. This position would include responsibilities of recruiting from local communities, assistance in training, counselling to employed Aboriginal persons and consultation in development of Aboriginal employment policies.

3) Relocation Assistance

The company can provide relocation assistance and job support services for persons who move their immediate families and effects into the local community for the purpose of employment at the resource development.

4) Work Rotations

The company, with the consent of affected employees, can implement work rotation schedules which allow for the practice of traditional pursuits.

The company which requires the fly-in/fly-out of labour can implement work rotation schedules which minimize the negative effects of the separation of families. For example, one company with a 10 weeks on/2 weeks off rotation developed a 6 weeks on/4 weeks off rotation for Inuit employees.

5) Discipline

The company can ensure prompt disciplinary action will be taken against supervisors or foremen who exhibit discriminatory attitudes or behaviour towards Aboriginal persons.

6) Transportation

The company which requires the fly-in/fly-out of labour can provide its employees with air travel costs or air transportation between designated communities and the resource development. For employees from areas other than the designated communities, the company can provide free or subsidized air travel costs or arrange for other modes of transportation.

7) Scholarship Program

The company can promote further education by developing a higher education program. Scholarships for post-secondary education can be provided to children of employees and/or to local residents who meet the required qualifications to attend a recognized educational institute. The scholarship can be specifically for

education in a resource development field, for technical training or for other purposes.

8) Youth Awareness Program

The company can provide opportunities for local youths to prepare for their careers by participating in various pre-employment activities. The company can help develop leadership capabilities, expand the knowledge of career opportunities and provide meaningful work experience for local youths.

9) Counselling

The company can provide employee development services through career, personal, financial and other types of counselling.

10) English, French and Aboriginal Languages

The territorial/provincial Minister of Education can make reasonable efforts to provide industrial English or French training to aid in the effective transfer of skills on the job.

The company, where practicable, can publish information on company activities in English and in the local Aboriginal language (ie. Inuktitut). The company can also provide for a translator at all company-community meetings.

The company, where practicable, can develop training curricula and verbal instruction in the local Aboriginal language.

11) Cross-Cultural Training

The company can provide cross-cultural orientation and training to supervisory, managerial and other personnel for the purpose of increasing awareness of the cultural, economic and social circumstances of local residents and local Aboriginal persons. Conversely, orientation to aspects of the mine operation & non-Aboriginal employees' lifestyles may be beneficial for Aboriginal employees.

12) Traditional Economic Activities

The company can recognize the importance of traditional economic activities of local residents and local Aboriginal persons. The company can make best efforts to accommodate personnel wishing to pursue hunting, fishing, trapping and ricing activities with special work rotation schedules. The company can assist employees who wish to maintain training for employment with the resource development while pursuing traditional harvesting.

The company can provide resources for impact studies into past and present levels of traditional harvesting to identify

constraints and opportunities for employees and the company itself. The company can use the impact studies to develop criteria for establishing whether a negative impact has occurred as a direct result of the resource development.

The company can agree to compensate local residents and local Aboriginal people for loss of beneficial uses of traditional resources harvesting and related activities that are directly caused by the resource development and its related activities.

4. ECONOMIC DEVELOPMENT AND BUSINESS OPPORTUNITIES

Any resource development project will change the economic structure of the area, stimulating the local economy and providing for new business and employment opportunities. Local government and the community can benefit from careful planning and implementation of economic development programs. The company can assist with economic development programs by providing information and developing policies which promote the use of local community supplies and services.

a) Business Opportunities

The company, in cooperation with local residents and local business, can design policies and implement programs to optimize the participation of local business in all phases of the resource development.

The company can ensure that priority will be given to utilize local business services where price, delivery capability and quality are competitive.

The company can assist local business by providing information regarding requirements for supplies and services to local Chambers of Commerce and other business organizations, and to individual requests.

b) Committee for Economic and Business Development

The company can develop a committee responsible for the effective management of economic and business development in the local community. The committee would be composed of representatives from each party interested or affected by the resource development; the company, local residents, government, union, etc. The committee would be responsible for implementing and monitoring economic development policies, ensuring that benefits arising from business opportunities from the resource development accrue firstly to local residents and local business, and assisting the company with obtaining required goods and services in an efficient and cost-effective manner.

c) Other Economic and Business Provisions

1) Bid Tenders

The company can organize a series of workshops in the local community to ensure that local businesses are aware of the company's tendering process.

The company can consider, where feasible and practicable,

- providing contracts to local businesses without proceeding through the tender process
- providing first opportunity for local business to meet the company's price and service requirements
- having closed or invitation-only bidding.

The company can waive tender deposits for local businesses.

2) Special Allowances

The company can provide, where feasible and practicable, fragmentation of contracts or purchase packages.

The company can assist in financing, dependent upon a viable business proposition from a local resident, for the purchase of special equipment to aid new local businesses who wish to participate in the resource development.

The company can waive bonding requirements for local businesses.

The company can provide 'Letters of Intent' with local business and contractors to facilitate easier access to financing.

5. SOCIAL, CULTURAL AND COMMUNITY SUPPORT

Due to the nature of resource development projects, it is often in the best interest of all parties if efforts are made by the company, with the cooperation and assistance of the local community, to develop social, cultural and community support programs. These programs facilitate better understanding and communication between the parties and provide for a healthy community atmosphere.

a) Committee on Community Support

The company can establish a committee for the purpose of coordinating the efforts of the company, the community and government services in the area of social, cultural and community support. The committee would be responsible for developing and implementing policies concerning community development,

identifying needs and negotiating financing of community-based projects and facilitating communication between the resource development and the local community.

b) Other Community Provisions

1) Communication

The company can prepare and distribute a monthly report or newsletter to keep local residents and local business informed on progress, employment activities and special developments.

The company can meet with local resident representatives on a periodic basis to obtain input and views on the impact of company policies and operations on the local community.

The company can ensure that all information disseminated to the public is available in English and/or French, and the local Aboriginal language.

2) Environmental Protection

The company can conduct orientation programs to assist the community in increasing awareness of the environment, and to increase awareness as to the potential for damage to the environment.

The company can ensure the protection of archaeological or heritage sites.

The company, in conjunction with government, can establish consultation regarding applications for licences and permits related to resource development activities in the local community.

The company is required to comply with all federal and territorial/provincial environmental requirements. The company can implement monitoring and enforcing programs for environmental compliance. The company can utilize local residents to participate in ensuring adherence to environmental policies.

The company can consider the environmental impact of projects initiated related to resource development. The company can ensure adherence to territorial/provincial and federal environmental assessment agency policies.

The company can acknowledge the existence of special wildlife in the local region and the potential disruption of traditional migrations of wildlife. The company can ensure precautions will be taken to minimize the disruption to wildlife habitat.

6. IMPLEMENTATION AND COORDINATION

a) Coordinating Management Committee

The company, in conjunction with the territorial/provincial government, can establish a committee to monitor the implementation of programs and adherence to the agreement policies. The committee will provide socio-economic, environmental, and other information to interested parties. The committee will act as a vehicle for the resolution of differences which may arise between the parties of the agreement.

b) Liaison Officer

The company can appoint a liaison officer who is responsible to act as a resource person between the community, the company and the various committees. The liaison officer would be responsible for the overall implementation and management of the agreement's policies and programs.

c) Evaluation of Agreement

The representatives of the parties to the agreement can periodically evaluate the effectiveness and adherence to the agreement. Amendments or changes to the provisions of the initial agreement should be made only with the unanimous consent of all the parties.

Representatives of the parties to the agreement can ensure an independent review and evaluation on the performance of policies and programs of the agreement.

d) Duration of Agreement

The agreement shall commence on the effective date and shall continue for a period of "X" months/years. Extension or termination of the agreement can occur only with the unanimous consent of the parties. Projects planned or implemented under the agreement cannot extend beyond the termination date unless unanimously consented to by the parties.

7. FUNDING

Agreements can be negotiated with federal and territorial/provincial agencies for financial assistance for specific initiatives. Assistance can be procured from existing programs but are limited by the availability of funds. The company should be providing the largest share of the funding for the provisions of the agreement.

8. OTHER ISSUES

a) Aboriginal, Treaty and Constitutional Rights

The company can ensure that nothing in the agreement will be construed as affecting the existing rights, privileges or freedoms of Aboriginal persons regardless of whether such rights, privileges and freedoms are recognized, established and defined before or after the execution of the agreement.

b) Collective Agreements

In the event that the company enters into a collective agreement with a union or joint council representative of all or any of the employees of the company, and that the collective agreement contains terms and conditions which conflict with the terms and conditions of the socio-economic agreement, the company's obligations to perform the terms of the collective agreement prevail. The company can undertake best efforts to ensure that the collective agreement does not eliminate, reduce or otherwise interfere with obligations under the terms of the socio-economic agreement.

ADDENDUM A

PROVINCIAL SPECIFICATIONS AS DETERMINED FROM AVAILABLE AGREEMENTS

ALBERTA

In Alberta, available agreements indicate that the company, the federal government, (as represented by the Department of Indian and Northern Affairs and the Department of Employment and Immigration,) the province, (as represented by the Minister of Housing and Native Programs) and local Native organizations are party to the socio-economic agreements.

SASKATCHEWAN

In northern Saskatchewan all mineral surface leases require the lessee to prepare and submit annual forecasts of economic opportunities for northern suppliers of goods and services. The lessee also agrees to enter into a Human Resources Development Agreement with Saskatchewan Education establishing guidelines and principles for maximizing employment and training opportunities for northerners. As part of the Human Resources Development Agreement they also agree to submit annual human resource plans which identify their recruitment, training and employment practices, project present and future manpower and skill requirements and submit employment statistics quarterly.

MANITOBA

Manitoba has developed a Manitoba-Canada Subsidiary Agreement on Northern Development (Agreement) which implements programs for the economic and socio-economic development of Manitoba. The aim of the Agreement is to increase the participation of northern residents in economic development, yet assist in the maintenance of their traditional lifestyles. The initiatives centre on community economic development, human resources development and community improvement. It also addresses the participation of northern residents in local employment, particularly in major resource sectors. The Agreement is executed and managed by the Agreement Advisory Committee who are appointed by the Northern Development Agreement Ministers' Committee. Financing for this Agreement is shared between Canada and the province.

ONTARIO

In Ontario, Agreements indicate that the company, the province, Canada and local Aboriginal organizations are parties to the socio-economic agreements. The principal negotiator for socio-economic agreements for Ontario has been Osgood Hall; they have participated in two recent comprehensive agreements.

NORTHWEST TERRITORIES

In the Northwest Territories, agreements indicate that the company and the Territorial Government or, the company and the local Aboriginal organization are parties to the socio-economic agreements.

Appendix E

Case Studies

APPENDIX E

CASE STUDIES

TAHLTAN TRAINING CENTRE

1. INTRODUCTION

Since the mid-1980's, northwestern British Columbia has been the site of a considerable amount of mineral exploration activity. This activity has been quite successful and resulted in two precious metal mines, the Golden Bear in 1989 and the Snip in 1991. A third gold mine, Eskay Creek is in the development phase. As well, a number of companies are continuing to explore in the area.

This area is also the traditional homeland of the Tahltan people as evidenced by their communities at Dease Lake, Telegraph Creek and Iskut.

For several hundred years, the Tahltan earned their livelihood as traders, moving goods between the Pacific Coast and the interior. In the past few years, as the pace of exploration on their traditional lands increased, the Tahltan recognized that, if exploitable ore deposits were discovered, it would inevitably lead to significant changes in their lives. It was also realized that a considerable amount of business would take place and they vowed to be active participants in this business.

The main goal of the Tahltan, with respect to economic development, is to be an active partner in that development. They realize that, to achieve their goal, they must change their traditional way of life.

In order to be prepared to be an active partner in the upcoming developments, the Tahltan Tribal Council (TTC) commissioned a study[6] to identify, amongst other things, employment and business opportunities, and the specific types of training and entrepreneurial skills required to take advantage of those opportunities. The study concentrated on opportunities afforded by mining in the region, but was not limited to this type of resource development.

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[6] Naas, O.O. Employment and Business Opportunities Related to Mining and Other Economic Developments in the Region. Prepared for the Tahltan Tribal Council, Dease Lake, B.C., March 1991. This report, and telephone interviews with Bettina Atley, Programs Manager of the Tahltan Training Centre form the basis for this write-up.

2. TAHLTAN PEOPLE'S INVOLVEMENT WITH MINING

The Tahltan have a history of involvement with mines operating in their area, including both of the mines already in production. The Phase I Report on Native Participation in Mining, included the Golden Bear operations, and the involvement of the Tahltan, as an example of a "best" case study.

Tahltan involvement with mining has not been limited to direct employment. The Tahltan Nation Development Corporation (TNDC), has negotiated several contracts at the Golden Bear mine. This contract work is seen by the Tahltan as a small start to what they would like to do and, to what they are capable of doing.

In addition, the TTC through its Dease Lake office has for a number of years been active in skills training, especially for the building trades, skills well-suited to the mining industry.

The consultant was hired by the TTC to identify the opportunities afforded by the recent mineral activity, and how to take advantage of these opportunities.

3. RESULTS OF THE CONSULTANT'S STUDY

The consultant identified the local labour force, those seeking employment as well as those already employed, and the Tahltan's present business enterprises. Potential employment and business opportunities related to mining developments were noted. These business opportunities include the construction of roads to the Snip and Eskay Creek mines and the mine and milling facilities at Eskay Creek. A lengthy list of potential service-oriented businesses which are generally required by the mining industry, was included in the report (see Annex A, p. 69).

The report also focused on the social environment which makes self-improvement difficult yet, so very important. It pointed out that in spite of their current involvement with mining, overall, the Tahltan actually have limited association with industrial development. As a result, there is a lack of role models to encourage the younger Tahltans to enter into the industrial world. This situation is further complicated by their lack of formal education (most Tahltan do not finish high school) which was also identified as a definite barrier to the band's participation in the industrial development of the area. The report concluded that pre-employment or orientation-type training was required and that the group best suited to deliver the training was the Tahltan themselves.

4. THE TAHLTAN TRAINING CENTRE

The TTC accepted the recommendation for the development of a training centre and in February 1991, the centre opened. Although run by the Tahltan, its enrolment is not limited to the Tahltan but serves all people from northwestern B.C.

The mining companies operating in the area supported the start up of the training centre. Three of the companies donated funds for the purchase of office equipment.

The training centre is located on Reserve #9, approximately 6 km outside of the community of Dease Lake. The centre offers living accommodation, for students from outside of Dease Lake, and is capable of handling 20 live-in students. As well, transportation costs are usually covered by the programs delivered at the training centre.

Although this is a new operation, the centre was not able to obtain new buildings. Thus, the facilities are limited. The dining room is used as a classroom, administrative office and lecture room. At least two classrooms are needed to improve the centre and a day care facility is also required.

The Tahltan Training Centre has set high goals for itself and its students. Much of the Centre's curriculum is presently aimed at re-training for specific occupational skills in order to acquire employment. The Centre's future goal is aimed at up-grading the education level of its students to Grade 12, a level that has been identified as being required to advance in the various occupations that a mine and mill operation offers.

Since the report identified the social environment as being an impediment to industrial employment, the training centre is offering pre-employment social skills upgrading. Through cross-cultural courses the students will learn about mining camp life, a life style very different to that on a reserve. These courses will encompass general behaviour and social concepts expected in a camp environment.

The training centre plans to deliver many of the technical trades programs that are needed by employers in the area. The identified programs include: heavy duty mechanics, Class 1 truck driving, plumbing, electrical, diamond drilling, mill operators and office administration.

As well, training will be provided for service activities required by the mining industry such as: first aid services, security operations, catering services, equipment servicing and maintenance, and warehousing.

Local mines will be invited to sponsor seminars on the topics related to mining while dealers and wholesalers will be requested to supply instructors for training in the handling of their products. In addition, the training centre will work with the Ministry of Education and other organizations to provide courses in the business skills which the Tahltan are lacking. The programs which have been identified include those covering administration and management, as well as human and social behaviour courses related to supervision.

Having only started in February 1991, the Tahltan Training Centre will graduate its first students in August 1991. Nonetheless, local businesses have already offered employment to the training centre's students. The encouragement given by the Tahltan Tribal Council, along with the interest shown by mining companies operating in the area bodes well for its future.

ANNEX A

Types of service work associated with mining operations

1.0 Manufacturing

Core boxes, including storage racks
Wooden ladders
Pallets
Wooden wedges
Survey stakes
Bin boxes
Miscellaneous shelving and racks
Equipment and tool lockers
Steel ladders
Pipe hangers
J-Hooks
Bullhorns
Miscellaneous storage sheds
Ongoing small alterations

2.0 Transportation

Hauling of Fuel and Lubricants
Delivery of general freight
Handling of concentrate
Small bus service to air strip and local assembly points

3.0 Supplies

Food services
Bakery products
Square timbers
Round lagging
Lumber
Plywood
Hardware products, including plastic pipe and fittings
Steel fencing
Steel pipe
Welding Supplies
Fasteners
Hose
Miscellaneous shop supplies

4.0 Other Services

Road maintenance, including snow removal
Pumper tank service for waste products
Portable pressure washer
Camp maintenance and repair service, including painting
Rental of equipment, including light vehicle

TRAINING PROGRAMS IN NORTHERN SASKATCHEWAN

1. INTRODUCTION

In northern Saskatchewan all mines are required, as a condition of their Surface Leases, to maximize the employment of residents of northern communities/reserves. The Government of Saskatchewan, in conjunction with the federal government and the mines, provides a variety of training programs to help attain this objective.

The northern half of Saskatchewan has a total population of 30,000 comprised of thirty-seven communities of about 20,000 people and twelve Indian bands with on-reserve population of 10,000. Approximately three-quarters of the population is of Aboriginal descent.

All operating gold and uranium mines as well as the planned developments have fly-in/fly-out or drive-in/drive-out operations due to their remote location. Air and ground pick-up points throughout the north allow the opportunity for many of the communities to participate in employment at the mines. However, much of the northern labour force is neither sufficiently skilled nor educated to meet the industry demands. Training is the key to greater participation of northern residents.

Two fundamental types of training programs are offered - those delivered at the mining site by the employers and those offered through educational institutes, primarily Northlands College. Northlands College, located in La Ronge with major sub-offices in Buffalo Narrows and Creighton, delivers the training either through its own facilities or, in many cases, brokers programs from the Saskatchewan Institute of Applied Science and Technology (SIAST). Funding for mining programs are often cost-shared with provincial, federal and employer dollars.

Since 1985, the proportion of northern residents employed at northern mining operations has increased from 32% to almost 40% and the number holding supervisory and technical positions has increased substantially. Almost all of the northerners involved in the mining and exploration industry training programs have gained employment. Industry reports that retention rates are very high; after 2 years, 85% of trainees are still employed in the industry. This success can be attributed to several factors including the co-operative spirit, local training with emphasis on reduction of stress associated with geographic and social transition, co-operative on-site training, flexibility and formal commitments.

Various government agencies, training agencies, mining companies and community groups work closely to determine training needs to

enhance the employment opportunities of northern people at the mines. Several liaison committees work to achieve maximum local employment. Through these committees, communities are able to comment on the success of training and their potential to provide trainees, to learn about new job opportunities and new training programs and, in some cases, to identify facilities within their towns for locally-delivered training. Companies identify job openings and expected opportunities and suggest new programs and modifications to existing programs based on their experiences. Training agencies design new programs and modify existing programs according to needs of the mining companies and communities.

2. LIAISON COMMITTEES

An example of an active liaison committee is the Athabasca **Project Team**, with representation from all levels of government, local Indian Bands and the mining industry. The Team was formed to respond to the several hundred new jobs which will be created in the mining industry in the Athabascan region over the next five years. The goal of the Project Team is to enable the people of the Athabasca region to more fully participate in the economic benefits and employment opportunities resulting from the region's mineral industry. One plan under review is the development of a staging centre at Wollaston Lake which could accommodate a variety of training courses related to mine employment. Another plan for increasing post-secondary facilities in other Athabasca communities is the provision of space for vocational classrooms in new school facilities.

The **Northern Labour Market Committee** includes delivery agencies, governments, Tribal Councils, non-governmental and private sector representation. This committee invites presentations from the mining industry. As a result of these presentations and continuing consultation, the committee provides useful input to Saskatchewan Education in their preparation of training programs. An April 1991 report, "Regional Planning Profile for Northern Saskatchewan", prepared by Saskatchewan Education describes the demographic and economic profile of northern Saskatchewan and from that information identifies the specific training needs of the mining sector as well as other sectors. Specific recommendations point to the need for skill training as mine workers, mill operators and apprenticable trades. Consultation with the committee and others was critical to the identification of the training needs.

The **Northern Mining Co-ordinator's Committee** is a less formal, but effective, forum of personnel from the various exploration and mining companies, government agencies and community-based organizations. Quarterly meetings allow ongoing discussion of their respective initiatives, successes and problems in the areas

of developing northern and Native employment, training and business opportunities. The open and constructive discussion of programs related to recruitment, business opportunities, community consultation and delivery systems leads to more effective training and further northern employment.

3. LOCAL LIFE SKILLS AND TRANSITIONAL TRAINING

Another area of emphasis is local life skills training prior to advanced training in southern communities or employment at the mines. The **Mine-Mill Pre-Employment Programs** have been successfully delivered for several years at Northlands College in Buffalo Narrows. The program is a joint effort with employment guaranteed at Cameco's Key Lake Mine for the successful trainees. The program was so successful at Key Lake that a similar program was introduced at Rabbit Lake. The program is considered a successful model for the hiring of entry-level positions. The graduates of the program have shown ability to advance, interest in furthering their education and a low attrition rate at the mine.

Underground Miner Helper Programs have been delivered by Northlands College on-site at the Hudson Bay Mining and Smelting mine. This successful program was developed in close cooperation with the mining industry and SIAST. Both classroom training and work experience for the 48 trainees are located underground. Northern mine and mining contractor representatives interview trainees for employment opportunities. The industry has expressed the view that this is a priority program that needs to be expanded in order to cater to the planned projects presently under various stages of environmental review.

Transitional Apprenticeship training enables more northern people to succeed in apprenticeship programs and to achieve journeyman status by removing many of the impediments which have been barriers to them in the past. Until the inception of this program the number of apprentices from northern Saskatchewan had been very small, and the number of journeymen even smaller. In 1984, discussions between Saskatchewan Education and Eldor Resources led to the development of the first Transitional Training Program in the North.

One important aspect of this model is its goal to reduce the adjustment stress of geographic and cultural relocation. The training of northern clients is provided in both a geographic and social "transition" from remote to urban settings. The actual schedule of the transition over the apprenticeship levels depends on the progress made by the trainees during the program. Another feature of the model is academic upgrading prior to, and concurrent with, the trades training component of the apprenticeship program. A further related aspect is the

provision of ongoing, personal counselling to determine academic, social, financial, or family concerns which are adversely affecting the trainee's program.

This model is illustrated by the program developed in cooperation with Eldor Resources and Saskatchewan Education in which 8 residents of the Athabasca region were indentured and received apprenticeship training. The success of this approach can be judged by the fact that 7 of the 8 trainees have received journeyman status. This is an ongoing program.

4. CO-OPERATIVE TRAINING

Another project promoting local training is the **Athabasca Innovations Project**, a co-operative training-work experience and academic upgrading program involving governments, training agencies, industry and community groups in the far north of Saskatchewan. It placed its first graduates into mine-mill positions in the spring of 1991. By 1992, it is anticipated that up to 45 Athabasca residents will graduate from the program. The majority of the trainees began the program with very limited formal education and work experience.

Another example of combining the co-operative spirit and local training is **Co-operative On-site Training** within the gold mining industry. The gold mining companies have cooperatively trained northerners so that they will be prepared to easily start work at other new mining operations. To date, northerners have received initial on-site training at Cameco's now-closed Star Lake mine for work at Corona's Jolu operation, and others were trained at Jolu for employment at Cameco's Jasper operation. This approach to cooperative training will be an ongoing feature of northern mining.

5. FLEXIBILITY

The ability to focus resources relatively quickly on an identified industry need is also leading to improved training in the north. A **Chemical Laboratory Technician Program** is in progress in the Multi-Purpose Laboratory in La Ronge. This program offered over the last few years was developed in close cooperation with the mining industry and SIAST when the need was identified. All graduates from this work-study program will be offered employment in the laboratories of northern mining operations. As well, graduates will be qualified to seek employment in a wide range of laboratory technical positions. The industry identified the need for chemical technicians, assayers, and environmental technicians. The industry wants to hire local employees to monitor the environmental impact of mining. When local employees can testify to the stringency of

environmental regulations and the industry's adherence to required specifications, the industry increases credibility in the local community.

6. GOVERNMENT OF SASKATCHEWAN REQUIREMENTS

In addition to the cooperative spirit, local training, creativity and flexibility, formal agreements to maximize northern benefit raise the level of consciousness with respect to this issue of both the employer and the local communities. Each mining company operating in the north is bound by its Surface Lease to negotiate a Human Resource Development Agreement with Saskatchewan Education. The central feature of these agreements is that employers make a specific commitment to maximize their recruitment, hiring, training, and advancement of northern people at all skill levels of their operation. Under these formal agreements, Saskatchewan Education provides skill training programs for northern residents specific to the companies' needs. With this underlying formal agreement, Saskatchewan Education coordinates the training needs of mining employers with the development and delivery of programs.

7. SUMMER EMPLOYMENT

Another way the mining companies have reached into northern communities for prospective employees is through high school summer employment. This summer Cameco is hiring 32 students to work for 154 hours each at the minesites. The program identifies potential applicants for future permanent jobs and also provides the students with experience and a more informed knowledge of the industry.

8. SCHOLARSHIP AND STUDENT ASSISTANCE PROGRAMS

The industry has provided significant dollars for scholarship and student assistance programs. In 1990, the two uranium operators, Cameco and Amok Ltd offered $40,000 in scholarships and plan to contribute $50,000 in 1991. Hudson Bay Mining and Smelting also has a significant scholarship fund. Other industry dollars are directed to award programs for performance in grades 7 to 12.

9. CONCLUSION

In conclusion, the operator of a new mine in northern Saskatchewan can increase northern employment by identifying his employment requirements to Saskatchewan Education, Canada Employment Centre, Northlands College, the northern communities and NorSask Native Outreach as early as possible. Saskatchewan

Education, through the negotiated Human Resource Development Agreement, will undertake to facilitate targeted training to meet the needs of the companies. Mining companies should continue to provide communities with many opportunities to question, discuss and comment on employment and other mine issues.

MANITOBA LIMESTONE TRAINING AND EMPLOYMENT AGENCY

1. INTRODUCTION

Major construction on Manitoba's huge Limestone Hydro Project on the Nelson River, 750 kilometres north of Winnipeg, began in 1985. Costing approximately $1.5 billion, Limestone is the fifth and largest (1280 MW net capacity) hydro-electric generating station to be built on the Nelson River, a river with a watershed of over 1 million square kilometres and a potential twice that of the Niagara System. The first of the 10 generating units was in service November, 1990 with overall completion stated for 1992.

2. THE LIMESTONE TRAINING AND EMPLOYMENT AGENCY

The Limestone hydro project provided an opportunity to initiate an economic development program which would benefit all Manitobans, with particular benefits for the north and northern Natives. The Limestone Training and Employment Agency (LTEA) established in 1984 was an integral part of this initiative. The largest training program associated with a major construction project in Canada, the LTEA contributed to a marked increase in employment of Aboriginal people, and raised the skill level of the northern workforce.

The Nelson/Burntwood Collective Agreement (NBA) and the Canada Manitoba Limestone Project Agreement provided the framework for the development of enhanced training and employment services for northern Manitoba. The NBA set affirmative action goals for highly skilled trades in response to which the LTEA was established. These goals proved to be somewhat unrealistic given the lack of apprentices in the north prior to Limestone and the length of time required to achieve journeyperson status in a trade.

The LTEA was established quickly and was fully supported by Cabinet. An effective communications strategy was developed to promote the LTEA; however, in hindsight, more extensive consultations with northern Aboriginal groups could have occurred.

The registration of over 5000 northerners for training and employment was one of the most successful public relations efforts connected with Limestone. This success, however, served to raise high expectations among northerners that training at the LTEA would lead directly to employment on the hydro site.

3. OBJECTIVE

The LTEA's objective was to coordinate and, if necessary, deliver training related to the needs of Limestone and spin-off private sector development. Existing educational institutions did not have the resources to develop a large enough inventory of trained northerners, particularly northern Aboriginals. Building a skilled northern labour force required special initiatives with active recruitment and innovative training strategies.

4. RESULTS

As a result of the LTEA's activities, the northern labour force changed from having virtually no skilled tradespersons in 1984 to over 1000 persons registered in apprenticable trades by 1990. The LTEA and the Apprenticeship Branch facilitated changes to the apprenticeship system that permitted the successful participation of northern Natives. Although the LTEA was working against a difficult time frame in graduating journeypersons through a four year training program in time for employment at the Limestone site, a large pool of northern apprentices was created through the LTEA. This is a necessary condition for a sufficient number of northern journeypersons to be available for future hydro or other developments in Manitoba.

The LTEA appeared to be a cost-effective method of training northerners for the hydro site. A Churchill Research Centre evaluation of the LTEA trades training costs was positive in comparison with existing delivery agents in the north. Taking into consideration the affirmative action costs, the longer days in simulated training, and the additional start-up costs involved with the LTEA, the cost comparison indicated very little difference between LTEA delivery and Keewatin Community College (KCC) delivery.

Training and employment support services were essential to reduce attrition among trainees and workers and were largely successful in promoting a smooth transition between living in a northern community and working on a major construction project.

Under the Canada-Manitoba Agreement, job referrals to the hydro site were the responsibility of CEIC. Difficulties with the job referral system of CEIC and the reduced funding provided by the Federal Government under the Agreement were encountered.

As with any project of this nature and magnitude, significant difficulties arose and had to be overcome. Success must be measured in the context of northern conditions prior to Limestone and the inability of existing institutions to prepare northerners for work on a large construction project.

5. SUMMARY

In summary, the LTEA set in motion an unprecedented level of educational activity in northern Manitoba. In the process, many of the complexities which have contributed to the difficulties of mainstream education programs and employment initiatives were identified and in many cases remedied. Given the enormity of the task before it, the LTEA's achievements were considerable and raised substantially the level of skilled labour in the north for any future initiatives, for example the Conawapa Hydro project or other industrial developments.

Condensed from: Limestone Training and Employment Retrospective Report; by the Conawapa Education and Training Working Group, January 1991

CANADA-MANITOBA NORTHERN DEVELOPMENT AGREEMENT

1. INTRODUCTION

The Canada-Manitoba Northern Development Agreement (NDA), 1982 to 1989, was a continuation of the earlier Northlands Agreements of 1974 to 1976 and 1976 to 1982. The NDA was administered by the Federal Department of Regional Industrial Expansion (DRIE) and Provincial Department of Northern Affairs. Its stated objectives were: to develop locally based income and employment opportunities in northern Manitoba; to increase participation of the northern labour force in employment opportunities; and, to facilitate increased participation of individuals in northern development by removing physical barriers to human and economic development.

A Program Advisory Committee representing both Native organizations and government agencies was established to review all project proposals and make recommendations.

The federal share of funds allocated to the NDA was not to exceed $173.15 million and the provincial share was not to exceed $88.4 million. The NDA consisted of three major sectors; A. Community Economic Development ($71.8 million), B. Human Development ($144.2 million) and, C. Community Improvement ($38.4 million). The balance of program funds ($7.2 million) was directed to public information, management, administrative and consultation activities of the NDA.

2. SECTOR A: COMMUNITY ECONOMIC DEVELOPMENT

Under Sector A there were 5 principal programs: Community and Regional Economic Planning, to assist identification and development of new employment opportunities; Resource Opportunity Development, to stimulate and respond to local developments particularly utilizing local and regional resources; Northeast Manitoba Development, to implement special measures focusing on the unique socio-economic conditions of this area; Resource Development, to assist developing activities relating to northern resources such as forestry, parklands, wildlife and agriculture; and, Local Government Development, to provide information, training and related assistance to support local government capabilities.

3. SECTOR B: HUMAN DEVELOPMENT

There were six programs under the Sector B Human Development: Canada Career Opportunities, to train indigenous residents for technical positions in Canada's public service; Canada Employment Programs and Services, to provide manpower services to increase northern participation in development opportunities; Indian Professional Development, to assist status Indians obtain post-secondary education; Northern Manitoba Affirmative Action, to increase participation of northerners, particularly of Native ancestry, in technical and professional resource-based opportunities; Relocation and Support Services, to assist in relocation and job-support services; and, Youth Development, to provide opportunities for youth in employment preparation.

4. SECTOR C: COMMUNITY IMPROVEMENT

The Community Improvement Sector C had three programs: Community Services for Northern Indian Communities, to provide basic services like roads, safe water, waste management, fire protection and public works; Community Services for Northern Provincial Communities, to provide service as above to communities under the jurisdiction of Manitoba's Department of Northern Affairs; and Remote Airstrips, to construct and improve airstrips and facilities to remote communities without alternate transportation.

MAY, 1991

NEW DEVELOPMENTS IN ONTARIO, 1991

INTERIM MEASURES AGREEMENT - NISHNAWBE-ASKI NATION

1. BACKGROUND

In 1986, the governments of Canada and Ontario signed a Memorandum of Understanding (MOU) with Nishnawbe-Aski Nation (NAN) to enter into agreements that will give NAN a greater role in the process of decision-making on matters that effect their lives. The federal and Ontario governments recognize that the Aboriginal population, should have a more equitable share of their homeland, and that they should be able to preserve their culture, languages and traditions by virtue of having resided in this land prior to the European settlers. The 1986 commitment was reaffirmed in an Addendum to the MOU in December 1989.

On November 28, 1990, the Governments of Ontario and Canada and NAN signed an Interim Measures Agreement (IMA) on Land and Natural Resources of the part of Northern Ontario that is covered by Treaties #9 and #5. This area embodies all Crown land, including land covered by water, north of the "Height of Land" which divides the watershed of Hudson Bay from that of Lake Superior. Private land, land held in fee simple, and land within organized municipal boundaries are excluded from the agreement. Activities that take place on Indian Reserves are not subject to this IMA, but are regulated separately under the Indian Act. The negotiations that led to the signing of the NAN IMA were chaired and facilitated by the Indian Commission of Ontario (ICO).

The IMA came into effect on February 26, 1991 and will continue to be in effect for three years from its date of signing (November 28, 1990) or until an agreement on self-government is reached, whichever comes first. Self-government negotiations began early in 1991, with Dr. R. Rosehart, President of Lakehead University, appointed as Ontario's chief negotiator.

2. TERMS OF THE NAN INTERIM MEASURES AGREEMENT

The Interim Measures Agreement is a tentative interim proposal with a life of three years. The agreement was meant to ensure that NAN and the 46 communities that fall under its political umbrella will be notified of activities that may have a "significant" effect on them. The government of Ontario has made a commitment to self-government negotiations for the Aboriginal groups, and this agreement is another step towards involving the Native bands in the mineral industry.

Currently, there are several processes that require government agencies to give notice of activities to the general public, through which Native communities may or may not have been informed of the activities on Crown land. This agreement reinforces the notification process, specifically for the benefit of the NAN-affiliated communities. It also provides a forum to resolve local issues with a primary focus on impact mitigation and environmental protection.

Under this agreement, NAN is entitled to be informed of any development, disposition of land, or activities administered by Ontario Government regulations and will have "30 days" to respond to the proposed undertaking.

The agreement does not give NAN direct management of the land and natural resources, but allows for a process to share information, in response to the concerns expressed by NAN and its member communities that, so far, they have not been involved in decision-making processes affecting land and natural resources.

The agreement also provides for the establishment of an IMA group consisting of one member from each of the signatory parties and the ICO as secretary, to provide a forum for resolution of local and regional issues while self-government negotiations are in progress. Final authority over land, natural resources and forms of government are issues that will be discussed and negotiated during self-government talks.

3. REACTION FROM THE MINERAL INDUSTRY

There are three key elements in the NAN Interim Measures Agreement that concern the Mineral Industry:

1) the definition of "significant activities",
2) the period of "30 days" that NAN can have before responding to a notice of an undertaking, and
3) the issue of confidentiality.

1) Definition of Significant Activities

The IMA suggests that the "significance" of an activity should be considered in the context of values measured by the First Nations. For example, any activity that may affect traplines, ceremonial grounds, traditional hunting, fishing and harvesting should be considered "significant". In order to determine whether or not an activity is "significant", factors such as duration, size, and extent of the activity, proximity to a NAN community, and involvement of residents external to the NAN communities must be taken into consideration.

The reaction of the mineral industry to the above is that a much more specific definition of "significant activities" is needed for the mineral industry to plan exploration projects.

Their suggestion has been to only consider work done in the stage of "advanced exploration" to be activities that may significantly impact on land. Industry believes that activities that do not require a work permit such as line cutting, geophysical surveys, claim staking, etc. should be exempt from the "significant activity" definition. These activities are currently exempt from the NAN process.

2) The Process of Notification and The 30-day Response Period

Once an activity is deemed to be significant, the process of "Notification" begins. The government agency which is charged with the issuance of permits and licences is responsible to give notice to NAN and/or NAN communities. In most cases, disposition and developmental activities involve more than one ministry, in which case each ministry is required to send notification to NAN for the component that they are responsible for. This exercise can be coordinated and notification processes combined.

The following applications are considered to be major activities which may have significant impact and therefore require notification. Please note that this is not an exhaustive list:

- Land use permits
- Leases
- Harvesting-of-wild-rice permits
- Commercial fishing licences
- Forest management agreements
- Timber management plans
- District cutting licences
- Work permits (Public Lands Act)
- Permits to take or discharge water
- Licences pursuant to the Lakes and Rivers Improvement Act
- Trapping licences
- Certificates of approval
- Tourist establishment licences
- Exemption from and designation under the Environmental Assessment Act
- Mining leases (Granting of Mining Leases is not discretionary. Once a company or corporation has performed work in accordance with prescribed requirements, it has a legal right to obtain a lease; the IMA does not change these legal rights.)
- Hydro electric development and transition corridors under consideration
- Provincial park sites
- Waste storage sites under consideration
- Changes in municipal boundaries

Example: a bulk sampling exercise in an advanced exploration project will require the following applications and notifications:

- o A letter of permission to bulk sample from the Ministry of Northern Development and Mines (MNDM)
- o Work permit, water crossing access road permit, and waste storage dump from Ministry of Natural Resources (MNR)
- o Water take permit, sewage permit, and waste storage site, Ministry of Environment (MOE).

As soon as an application is made to the government agencies, notice should be given to NAN and NAN communities. At the same time, the private sector should be encouraged to keep the local people informed of their planned undertaking.

The government agency shall not proceed with the issuance of permits and licences for a period of 30 days after the notification. There are exceptions to these rules; in the case of major undertakings, 30 days will not be enough to assess the impact of the project. In some special circumstances, when the progress of the project will be significantly prejudiced by a 30-day delay, a shorter time frame of notification may apply.

The notice given from the government agency should contain sufficient information in order to enable NAN to assess the activity. If the government fails to notify NAN of a certain activity, the First Nations can bring the matter to the attention of ICO and/or the IMA group.

The IMA does not provide NAN and NAN communities with any additional measures to affect the progress of an activity, other than the ones that were available to them prior to the signing of this agreement.

The mineral industry has expressed great concern about undue delays that may arise from this 30-day response period, and that timely issuance of permits and licences will be jeopardized. Under some circumstances they foresee that, if the information provided in the notification does not enable NAN to evaluate the project, the 30-day period allowed for a response may extend to a much longer term.

The mineral industry is also uncertain as to the future progress of a project should NAN disapprove of it. This has proved to be a legitimate concern. Already, an exploration project within the NAN area has been put on indefinite hold, since the local band has indicated that it will take whatever action is necessary to block the issuance of permits.

Mineral industry representatives have asked that, in order to minimize the waiting period, the 30-day period should be counted

immediately after the application is made, rather than from the time the government sends the notice to the First Nations. There is also concern expressed that if the number of notifications sent to NAN rise, the amount of paper work may become unmanageable and thus result in further delays stemming from administrative bottle-necks.

3) Confidentiality

The NAN IMA provides some protection for confidential activities. This agreement states that information that is by law privileged or exempt from disclosure, can be kept confidential.

Staking of claims and airborne geophysical surveys are considered confidential by most companies, and since they don't pose a significant impact on the land, they don't require notification. However, the exploratory work that follows after obtaining the mineral rights of a parcel of claims may have significant impacts and will require notification. Similarly, early stage exploration may not have a significant impact on the land, but, if due to discovery, exploration activity escalates mid-season, new work permits may be required which can both delay the progress of the project and jeopardize confidentiality of very sensitive activities.

The suggestion from the mineral industry is that sensitive information should not go beyond government agencies and if there is an absolute need for notification of such activities, a formal confidentiality agreement be signed with NAN.

4. REMARKS

Since the NAN IMA came into effect in February 1991, all signatories of the agreement are continually evaluating the practicality of implementing such an agreement, and trying to remove its flaws.

After extensive consultation, the Ministry of Northern Development and Mines and the Ministry of Natural Resources have recommended all of the activities listed below, which require a work permit, be defined as "significant", and thus be subject to notification:

- all work required under the Part IX of the new Mining Act (Reclamation and Rehabilitation),
- all bulk sampling of more than 10 tonnes of material,
- all disruptive activities such as lines cut at more than 1m width and spaced at less than 20m intervals, clearing, mechanical stripping, mechanical trenching,
- activities that require use of heavy machinery,
- drilling,

- road and bridge construction, and
- long-term camps.

It is anticipated that after at least one year of the implementation of the NAN IMA, the signatories will be in a better position to revise the terms of the agreement for future negotiations and formulation of subsequent policies.

FRAMEWORK AGREEMENT AND INTERIM MEASURES AGREEMENT WITH FIRST NATIONS NORTH OF LAKE SUPERIOR

Six First Nations north of Lake Superior and the Governments of Canada and Ontario have signed agreements to begin negotiations on land and larger land bases for the communities. The First Nations are part of the 1850 Treaty Council, and negotiations were facilitated by the Indian Commission of Ontario which will continue to assist in these negotiations, and negotiations for self-government in the future.

The Interim Measures Agreement will be in force for two years, or until negotiations under the framework agreement are settled. The IMA sets up a process by which the First Nations will be kept informed of developments on Crown land that may have a significant impact on the First Nations within the area covered by the IMA.

The First Nations will be informed of "significant developments" and will have a 60-day period in which they can make known their concerns about the proposed development.

Mining related activities are excluded from the IMA at this time, but are the subject of on-going negotiations. The exclusion is meant to allow time for discussions aimed at determining how best to include the mineral industry in the agreement, recognizing that these agreements cause significant difficulties to the mineral exploration industry in particular.

Appendix F

Mineral Associations' Involvement with Aboriginal People

APPENDIX F

MINERAL ASSOCIATIONS' INVOLVEMENT WITH ABORIGINAL PEOPLE

1. INTRODUCTION

There are a number of associations in Canada which have been organized to represent the interests of various aspects of the mineral development industry. These organizations, national, provincial and territorial, were contacted in late May 1991 to ascertain what, if any, of their programs were directed towards Aboriginal peoples.

From the following list it is clear that a good number of associations are attempting to ensure that Aboriginal people are more aware of the mineral development industry.

The list primarily represents initiatives underway at a recent point in time. As a result, it may not capture all existing initiatives. More importantly, however, it provides a better understanding of what is and can be done to help increase the participation of Aboriginal people in mining.

2. MINING ASSOCIATIONS

Mining Association of Canada (MAC), Ottawa
Prospectors and Developers Association of Canada (PDAC), Toronto

These two national associations have adopted a joint approach when dealing with matters pertaining to Aboriginal peoples in the Yukon and Northwest Territories.

Seminars on Land Claims and the Mineral Industry

. a series of seminars bringing industry, government and Aboriginal association representatives together to discuss the potential effects on the mineral industry of land claims in the Northwest Territories and Yukon

Joint Aboriginal/Industry Working Groups

. started as a result of the seminars on land claims
. consisting of representatives from various industry associations, Aboriginal organizations, and companies
. an Inuit Mining Familiarization Program to provide participants from the eastern Northwest Territories with a firm grounding of mining in the north, is in the process of being developed

For information call: MAC (613) 233-9391
PDAC (416) 362-1969

Ontario Mining Association (OMA), Toronto
Prospectors and Developers Association of Canada (PDAC), Toronto

Contact with Aboriginal People

. letters have been sent to Indian bands throughout Ontario by the OMA explaining what the OMA is and offering information on the mineral industry in Ontario

Possible Seminar on Mining in Northwestern Ontario

. the OMA and PDAC are jointly involved in early planning, with a number of Indian bands in Northwestern Ontario, to investigate the possibility of developing a seminar on the mineral industry in this province

For information call: OMA (416) 364-9301
PDAC (416) 362-1969

Mining Association of Manitoba (MAM), Winnipeg

. although MAM is not presently involved in programs targeted specifically at Aboriginal people, they have in the past sponsored programs such as: prospecting courses, cross-cultural courses, job training programs and outreach recruiting all of which were designed to increase the level of participation of Aboriginal peoples in mining

For information call: MAM (204) 942-2789

Uranium Saskatchewan, Saskatoon

Uranium Today

. a trailer unit which tours the province providing information about the uranium industry to schools, community groups and the public
. while not specifically targeted at Aboriginal people, Uranium Today is available to visit reserves and Aboriginal communities

For information call: Uranium Sask. (306) 242-8222

Mining Association of British Columbia (MABC), Vancouver
British Columbia and Yukon Chamber of Mines (BCYCM), Vancouver

The Mining Association of British Columbia and the British Columbia and Yukon Chamber of Mines have jointly participated, together with members of the forestry and fishing industries, in a series of meetings with Aboriginal groups from across British Columbia. The meetings provided valuable opportunities for key representatives from all groups to develop a working rapport on which to base future discussions. Additional forums of this type may take place in the future, building on the success of the initial meetings.

For information call: MABC (604) 681-4321
BCYCM (604) 681-5328

Northwest Territories Chamber of Mines (NWTCM), Yellowknife

Mineral Industry and Northern Employment and Safety Committee (MINES)

. the NWTCM is involved in the MINES Committee along with representatives from government departments, the local college and Aboriginal organizations, who are interested in both training and mining
. meets regularly to discuss ways of developing and bringing in programs designed to train Aboriginal people for employment in the mining industry
. through the initiatives of the MINES Committee the following training programs are offered or under consideration:
- a Mill Operator training program through Arctic College
- an entry level pre-employment program offering courses covering a variety of subjects including academic upgrading and mining orientation has been proposed, with a start up date of September 1991
- a Prospectors Training program to start in 1992 has been proposed

For information call: NWTCM (403) 873-5281

Appendix G

Summary of Responses to Questionnaires on Aboriginal Participation in Mining

APPENDIX G

SUMMARY OF RESPONSES TO QUESTIONNAIRES ON ABORIGINAL PARTICIPATION IN MINING

1. METHODOLOGY

When developing the work-plan for the second phase of the study on Native Participation in Mining it was apparent that, in order to fulfil the objectives as set out by the Mines Ministers in 1989, the Sub-committee would have to consult with both the industry and the Aboriginal people. Given the Sub-committee's minimum financial resources, it was only possible to contact selected producing mines and Aboriginal communities or reserves associated with these mines.

During the development of the questionnaires and the selection of companies and communities/reserves to be surveyed, the Sub-committee was generously supported and assisted by both the national Aboriginal associations (the Inuit Tapirisat of Canada, the Assembly of First Nations and the Native Council of Canada) and the mining associations (Mining Association of Canada and the Prospectors and Developers Association of Canada).

Each jurisdiction selected both the producing mines (and in one case, exploration companies) and the communities or reserves to be contacted.

Two questionnaires were developed by the Sub-committee; one for mining companies (Addendum A, p. 115) and a very similar one for Aboriginal reserves and communities (Addendum B, p. 123). The completed forms were sent to the Sub-committee representative from the Department of Indian Affairs and Northern Development who co-ordinated both this summary and the analysis (Appendix H, p. 133).

Representatives from 28 mines located in Alberta, British Columbia, Manitoba, New Brunswick, Northwest Territories, Saskatchewan and Yukon completed the questionnaires. Three other companies responded that they either had no Aboriginal participation or did not keep employment records differentiated by race, and thus did not complete the questionnaire.

Responses were received from 20 communities and reserves in British Columbia, Northwest Territories, Saskatchewan and Yukon.

All information was provided on the basis that data on individual operations or communities/reserves would be kept confidential.

2. SURVEY RESULTS

2.1 Introduction

The following summary of the responses to the questionnaires groups data and comments on the issues under broad headings. The information from both companies and communities/reserves is included and, where appropriate, these have been identified separately. However, it is important to note that not all respondents answered all questions.

During compilation of the survey results from the mining companies, it became apparent that there were significant differences between fly-in/fly-out and townsite operations. These differences are reflected in this paper. Although both Aboriginal communities and reserves were surveyed, there were no appreciable differences in the responses that were received, hence they are not differentiated.

Inevitably, the need to generalize and group responses means there is some loss of specifics and omission of detailed comments. It is recognized that some of the detailed comments omitted relate to issues which are particularly important in individual cases.

However, it is intended that this summary capture the essence of the data and comments contained in the questionnaires.

2.2 Aboriginal Exposure to Mining Operations and Aboriginal Employment

With three exceptions, all communities and reserves had residents involved in, or exposed to, some aspect of mining. Therefore, their perceptions of the industry are based on actual experience. One community has had no previous experience with mining but is currently involved with new mining activity, thereby providing an example of involvement in the early stages of development.

Aboriginal people indicated that they are, or have been, employed directly throughout company operations and through supporting contractors or businesses. The activities included Exploration, Development and Mining/Milling on a part-time, full-time or seasonal basis. The activity most commonly identified by them was Mining/Milling.

The two jobs most frequently identified as being filled by community/reserve residents were Labourer and Truck Driver/Equipment operator followed by Camp Worker, then Trades, Clerical, Maintenance Worker, Apprenticeships, Food Services, General Construction/contracting and Site Security.

Other jobs mentioned included pilots, employment coordinator, underground mining labourer, driller and driller's helper.

Company responses covered open-pit and/or underground mines; mines producing a range of commodities (primarily precious and base metals, uranium and coal); exploration, development, mining/milling and other activities; part time, full time and seasonal employment; townsite and fly-in/fly-out operations (one company indicated that it was both a fly-in/fly-out and a townsite operation[7]); and, operations in several political jurisdictions and geographical regions of Canada.

Seventeen companies indicated that they had employed Aboriginal people in 1990 while one reported it had never employed Aboriginal people and three did not know. The main jobs filled by Aboriginal employees directly hired by the companies were Truck Driver/Equipment Operator, then Labourer and Trades, followed by Clerical, Maintenance Worker, Camp Worker, General Construction/contracting, Apprenticeships, Management, Food Services and Site Security. A number of other jobs were identified including miners and underground miner trainees, carpenters, mill and process plant operators, technicians and personnel, recreation department and training staff. Aboriginal people are employed in a broader range of activities in fly-in/fly-out operations than in townsite operations.

Several companies who responded indicated that they do not keep statistics on the basis of race or creed. It was also noted that statistics may show jobs filled by Aboriginal employees but do not show total Aboriginal employment at any particular time. Given these limitations, quantitative measures of Aboriginal employment are impossible. In some cases companies indicated that the information provided may not be representative of the actual situation.

2.3 Progress of Aboriginal Employees

Several companies reported that Aboriginal employees who had taken training had progressed to the top of their pay scales. In some cases, they advanced into more senior positions, both technical and supervisory, without problems. Other companies reported difficulty or no success with apprenticeship programs due to the fact that Aboriginal employees had a high turnover rate. Some companies did not have specific information on

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[7] This company exhibited more of the characteristics of a fly-in/fly-out operation and has been included as one for the purposes of this study.

Aboriginal employees. However, they expressed the opinion that Aboriginal employees would progress the same as other workers through the normal progression provisions of the collective agreement or through skill and ability or merit in staff and training positions.

The perception of Aboriginal people on this issue in some cases was similar to that expressed by the companies i.e. they were positive about the prospects for advancement. They recognized that the difficulty of some Aboriginal employees to maintain continuous employment makes advancement difficult in a unionized operation. In other cases, Aboriginal people expressed a sense of rejection (even after taking training) or saw little opportunity for progress or advancement. In part, they attributed this to a lack of education and/or experience.

2.4 Aboriginal Business Contracts With Mining Companies

Company contracts with Aboriginal businesses were most frequently for Line Cutting/Geophysics, Trucking Services and General Construction/contracting. One Saskatchewan mine reported that its surface lease requires contractors to maximize their Aboriginal workforce content. In other cases in Saskatchewan, Alberta and British Columbia, conditions regarding northern employment and northern sub-contractors and/or the use of Aboriginal people were noted as being an important part of the bid process and contracts.

Companies identified a range of problems related to the employment or contracting of Aboriginal employees including absenteeism and turnover, alcohol and drug problems, work attitudes, cultural differences, skill levels, higher costs and union barriers. Remedies to these problems included counselling, training, dismissal in line with company policy, provision of country foods and northern TV and more attention to recruiting of new employees. It was pointed out that a number of these problems applied to all employees, not only to Aboriginal employees.

Perception by hamlets/communities of the problems encountered was similar on some issues but also included lack of training, discrimination, no promotions, health problems and social and family considerations.

2.5 Barriers That Inhibit Aboriginal People From Participating in Mining and Related Activities

The three factors most commonly identified by the mining companies as inhibiting barriers were: Lack of experience, No desire to work in a mine and Limited access to required education/training. Other factors identified much less frequently were: Availability/cost of transportation, Language

difficulties, Misunderstanding of application/interview procedure, Union membership regulations, Not being informed of job openings and Peer pressure. In addition, individual companies identified lack of interest in entry-level jobs, discrimination, cultural differences and fear of approaching a mining company for employment.

Communities and reserves also identified Limited access to education and Lack of experience as two major impediments. Other barriers identified as being significant included Not being informed of job openings, Availability/cost of transportation, Language difficulties, Misunderstanding of application/interview procedure and Union membership regulations. Additional factors identified included lack of interest in mining and concerns about the impact of mining development in a region.

2.6 Barriers That Prevent Companies From Hiring Or Contracting Aboriginal People

Three barriers were identified most often by companies: Lack of experience, Very few or no job applications from Aboriginal people and Inadequate education. A number of other barriers were mentioned, some of which were very important for a particular mine e.g. distance from communities in the case of a remote northern mine. Another company stated that it was fully mechanized with no labourer positions.

Aboriginal people most frequently identified Inadequate education and Lack of experience followed by the Cost of training, Very few or no job applications submitted by Aboriginal people and Language difficulties. Other barriers mentioned were no desire to work in a mine, restriction of Aboriginal employees to short term, labour-intensive type of jobs and sub-contractors who bring in personnel and don't hire locally.

2.7 Education

Companies were asked to specify the minimum level of schooling required for lowest entry-level employees i.e. this applied to all employees, not just Aboriginal employees. Individual companies outlined requirements varying from no minimum or no criteria to Grade 12. Some indicated flexibility in the educational requirement but had other basic requirements e.g. ability to read/write/communicate in English, math skills, motor skills, etc. In two cases, requirements for the mill were specified as Grade 10.

Four companies indicated that they hired employees not literate in English or French. None of the companies provide language training but in some cases translations of memos,

notes and signs are made and interpreters are provided when required.

Communities and reserves indicated that the average level of schooling attained by their people ranged from Grade 4 to Grade 12. However, many indicated that the average level of schooling attained was Grade 10 or less. The minimum level attained by those hired by the companies ranged from Grade 4 to Grade 12.

Complete secondary education is available in six communities/reserves but is not in 14 others. For the most part, reaction was negative to students having to leave home to complete their secondary education. However, some accepted the fact that options were limited and one believed that it provided exposure to a larger community and varied cultural groups.

Adult education was available in most of the communities which responded and has been used to obtain employment in mining by the residents of some communities and reserves. A problem identified in one specific case was that of insufficient demand i.e. people who upgraded themselves were waiting for jobs while more were training.

Academic and trades training of various types was, or is, available to many communities, either in the community or elsewhere. Some problems were identified with respect to funding and also with respect to sending young people out for training.

2.8 Program Assistance

Three-quarters of the companies were aware of federal, provincial/territorial or local programs available to assist Aboriginal people in gaining employment, training or skills development. Of these, the majority had used provincial/territorial programs. There was a more or less even division between those who used the federal and local programs and those who did not. Overall, fly-in/fly-out operations appear to have used government assistance programs more often than townsite operations. Little information was provided on the specific programs used or the results achieved.

Most communities and reserves were aware of programs to assist Aboriginal people and about half had used them.

Most communities and reserves were also aware of the programs or services designed to assist Aboriginal people with business development and, of those aware, about one-half had used them. One respondent noted that area people lacked the assets which

seem to be a must for all governments in giving loans and grants.

2.9 Company Training

Less than half of the company respondents indicated that they had initiated training, education or skills development programs for Aboriginal people. Most of those who did were fly-in/fly-out operations.

The range of training undertaken covered pre-employment, academic, on-the-job, trades and company orientation. Some internal company training was given at the minesite while other training was provided in cooperation with government and/or colleges or with other operating mines. Companies considered most of the training to have been very successful.

Several communities and reserves were unaware of whether or not companies had training programs. Where they had experience with company programs, their comments tended to be positive. However, some problems were noted. In one instance, most trainees did not continue on with the company after the completion of their training.

2.10 Unions

Most townsite operations which responded were unionized while most fly-in/fly-out operations responding were not. The collective agreement at one Saskatchewan fly-in/fly-out mine includes a northern preference section which sets out specific objectives and commitments with respect to the hiring, training, promotion and recall of northern/Aboriginal employees. A special apprenticeship program for Aboriginal apprentices has been negotiated at another Saskatchewan mine.

2.11 Communications

Most companies reported that they employed a mix of local and non-local English/French media when advertising job openings or publishing other notices. Three use local Aboriginal language media and one uses non-local Aboriginal language media. Other companies relied on unsolicited applications, local phone calls, university interviews, Employment and Immigration Canada (EIC) and recruitment agencies.

Communities and reserves became aware of different stages of mining operations through company contacts, English/French media, Aboriginal language media, the licensing process and other indicators of company activity. Assessments of the adequacy of company communications efforts ranged from unsatisfactory to very good. One respondent reported that communications with a local mine had improved over time.

Recommendations made by individual communities and reserves on how to maintain the information flow from the companies included: providing northern band and hamlet offices with access to all developments in the north relating to mines; keeping northerners informed through local offices and media from Day 1 of company activities; company meetings with municipal councils, trappers, fishermen and the general public; consultation with band leaders and site visits. One band reported that it had taken the initiative to improve communications rather than waiting for the company.

2.12 Hiring of Aboriginal Employees

Hiring

One-quarter of the companies had people of Aboriginal ancestry on their hiring staff. Several companies used agencies or other third parties, in some cases Aboriginal-owned, to hire Aboriginal employees. None used agencies exclusively for hiring. Other agencies used by companies included Northern Outreach Services, Canada Employment and Immigration Commission, band offices and, in one case, the territorial government.

Interviewing

Companies used a combination of formal and informal methods to interview potential employees including telephone calls, in-person interviews, resume checks and aptitude tests.

English was the predominant language used although Aboriginal languages were used in some cases in Saskatchewan and the Northwest Territories and French was used in New Brunswick.

In-person interviews for townsite companies were held predominantly at the minesite whereas fly-in/fly-out companies tended to use the local community/reserve facilities or company headquarters. Other locations included Native Outreach offices, university and colleges and employment offices in towns and other cities when required.

2.13 Accommodation of Traditional Pursuits and Cross-cultural Awareness Training

Type of Operation and Provisions for Aboriginal Employees

Responding companies included camp fly-in/fly-out operations, camp bus-in/bus-out operations and townsite operations with private and bus transportation (subsidized in some cases). As noted previously, one company indicated that it was both a townsite and a fly-in/fly-out operation. Provisions to allow for the practice of traditional pursuits by Aboriginal

employees include special shift schedules and rotation programs and the provision of opportunities to speak their language, play cards, communicate home by radio and pursue hobbies. One company provides for early leave of absence and special leave of absence for hunting under certain circumstances.

Work Rotations

Work rotations were reported only by fly-in/fly-out operations. The length of the rotation varies from mine to mine based on such criteria as position held (senior management, department head), department and location of hire (southern or northern).

In some cases, shorter rotations are provided for Aboriginal employees. At some other operations, the rotation accommodates Aboriginal employees but was not established specifically for this purpose.

Native Affairs Coordinator

Almost one-quarter of the companies responding employ a coordinator. All are employed by fly-in/fly-out operations and all except one were of Aboriginal ancestry. Coordinators are involved in a wide range of activities including the recruitment and hiring of Aboriginal employees, development of northern and Aboriginal business, liaison with community leaders and local people, working with government agencies to plan and coordinate Aboriginal training and assisting Aboriginal employees with problem solving.

Of the communities and reserves which had contacts with coordinators, most experience tended to be positive although in some cases contacts had been limited.

Half of the communities and reserves did not know if companies had made efforts to accommodate traditional pursuits of Aboriginal employees and/or cultural differences between Aboriginal and non-Aboriginal workers. About one-quarter were aware of company efforts to accommodate Aboriginal interests and generally commented favourably on these efforts.

Cross-cultural Awareness Training

The majority of companies do not provide cross-cultural training for Aboriginal or non-Aboriginal employees. Relatively more fly-in/fly-out companies provide it than townsite companies. One company assessed results as being limited due to high turnover rates and absenteeism although the programs resulted in a better understanding of both

cultures. Another company rated the training as being very effective.

More than half of the communities and reserves were aware of company cross-cultural training programs. One commented that company personnel should have to go through training as well as Aboriginal employees.

2.14 Company Information/Consultation Processes

Prior to the commencement of their mineral-related activity, more than one-half of the companies undertook consultations with Aboriginal individuals, communities or groups. The majority of fly-in/fly-out operations undertook consultation as did about one-half of the townsite companies. Methods used by the companies included company visits, presentations and discussions with individuals and communities, public hearings, a formal consultation process, tours and site visits and discussion of business and employment opportunities. In one case, a company hired Aboriginal people to act for it during hearings and to represent it during visits to northern communities.

Consultation with communities are being undertaken by most of the fly-in/fly-out operations and approximately one-third of the townsite operations. Consultation is both formal and informal e.g. meetings by a Northern Native Liaison Officer with Aboriginal and community officials regarding an expansion; regular meetings of an Aboriginal/corporate Community Liaison Committee; ongoing consultations with tribal councils; scheduled meetings to discuss mutual concerns; council minesite visits and scheduled periodic tours by local residents (3-4 times/year); proactive communications and consultations on present activities and future plans, primarily environmental issues. One company noted, however, that it received little response from Aboriginal people to a public meeting it held. In addition, it did not have any response to its request for applications to work on its property.

More than half of the communities and reserves indicated that a company was currently undertaking ongoing information/consultation processes with them. The nature of the processes being followed reflect those outlined by the companies. In one case, it was indicated that the meetings are of an adversarial nature.

2.15 Socio-Economic Impact Studies and Agreements

Socio-economic Impact Studies

Prior to the commencement of mineral activity, most of the fly-in/fly-out operations and about one-half of the townsite operations conducted socio-economic impact studies of the area to be affected by their operations.

Most of the identified impacts were positive in nature. Examples from the studies include: increased local business opportunities; the provision of jobs for local residents; training opportunities for local residents; and, improved transportation. Some studies identified measures to assist Aboriginal peoples including the need for access to a northern office and a Native coordinator/recruiting office, special work rotation, northern pick-up points and provision of air transportation and preference for northern contractors. In some cases, impacts were predicted to be minimal because of pre-existing operations. One study predicted that rotation-style employment would have a negative impact on families.

Socio-economic Agreements

About two-thirds of the fly-in/fly-out operations entered into socio-economic agreements as well as almost one-half of the townsite operations. Of these agreements, one-half were negotiated because of government mandate and the balance were voluntary. Signatories most frequently were the company and the provincial or territorial governments although in some cases they included the federal government and, in one case, included a community/reserve.

Company obligations vary between agreements and include such provisions as maximizing the employment of local area residents and the use of local businesses, providing annual progress reports to governments, maximizing social and cultural benefits while minimizing adverse social and cultural impacts, restricting production to maximize mine life, use of Canadian ships, goods and equipment, and minimum annual exploration expenditures. Some agreements set targets for the use of local goods and services from a specific jurisdiction or region, including provisions related to Aboriginal employment and businesses.

Under one agreement, government was required to build and operate public infrastructure. In another, government obligations included providing training programs related to the needs of heavy industry, providing the company with information on qualified residents and pertinent assistance programs and publishing a quarterly newspaper.

Most companies considered that their agreements had been effective although one reported only minimal success with employment aspects. One company stated that, because of its agreement, it had made a more conscious effort to maximize the use of local labour and business with the result that all of the agreement obligations had been achieved.

Results of socio-economic agreements reported by communities and reserves included provision of information and employment to those seeking work and a specific instance of hiring local people. One respondent indicated that one company, because of its agreement, is now forcing its contractors to hire northerners.

2.16 Business Partnerships, Joint Ventures and Financial Agreements

Almost half of the companies have entered into business partnerships, joint ventures or other types of financial arrangements with Aboriginal people or Aboriginal-owned businesses. These have covered bussing, timber clearance, conveyor clean-up, housing, trucking, security and janitorial services, line-cutting and road maintenance. Some companies indicated discussions had been initiated to involve Aboriginal people in joint-venture participation in exploration, modernization projects and mine development. One indicated a willingness to involve a local band as an equity partner if this was compatible with the band's long-term plans.

2.17 Benefits to a Company from Participation of Aboriginal People

Only two companies, one an exploration company, stated that there was no benefit. All other companies indicated that there were benefits from Aboriginal participation. The benefit identified most often was Good Business Practice. Following this were Access to Local Workforce and Better Public Image, then Cooperative Approach to Exploration and Access to Government Programs followed by Better Labour Relations and Good Bottom Line.

Lower Operating and Transportation Costs and Nearby Sources of Goods and Services were identified by most fly-in/fly-out operations but not by townsite operations.

Other benefits mentioned were more stability and smoother operations and the economic benefits of local purchasing. Two companies indicated that they felt a sense of obligation to involve Aboriginal people in their operations.

2.18 Costs to a Company of Participation of Aboriginal People

Several companies indicated that there were no additional costs. Other companies identified Higher Costs (Lower Productivity) and More Complex Personnel Relations as the main costs of Aboriginal participation. Several companies specifically identified training as a cost. However, one company noted that other than original program training costs, employing Aboriginal people has resulted in no other cost to its operation. The company continued that, since a large portion of the training was funded by government agencies, it was not a major cost to the company.

2.19 Benefits to a Community/Reserve of Participation in Mineral Activities

Some communities and reserves stated that there were no benefits. The main benefit identified most often was Employment Opportunities, followed by Increased Cash Infusion and Training and Development of Transferable Skills, then Improving Quality of Life, Local Business Opportunities, Improved Air Services and Communications. Other benefits identified included company donations for local recreational or other facilities and mine visits for children.

2.20 Main Costs to Individuals of Participation in Mineral Activities

Some communities and reserves stated that there were no costs to individuals. Others identified the main costs as Increased Social Problems, Increased Health problems and Increased Family Problems followed by Loss of Ability to Practice Traditional Pursuits. Additional costs identified were seasonal employment, having to relocate, personal costs (transportation, vehicle wear) and family separation due to work rotations. One observed that some of the identified problems may have increased during mine employment but that they existed before the mine was developed and could worsen when the mine closes. Another stated that the individual must take responsibility if the social costs are too high, not the employer.

2.21 Main Costs to the Community/Reserve of Participation in Mineral Activities

A number of communities said there were no costs. Major costs identified by others were Problems with maintaining traditional pursuits, including Loss of Wildlife, Change of Wildlife Migratory Patterns and Disruption of trap lines. Slightly less frequently identified were Environmental Problems including Water Pollution and Soil/Subsurface Pollution. Other costs identified were spiritual loss due to

exploration in an important cultural area and not enough protection for Indian pursuits (too many hunters and fishermen in the area).

In several instances, the communities/reserves notified the company of the problems and in two cases the provincial/territorial governments also were notified. They reported that a number of the companies took, or are taking, some action to mitigate the adverse effects of their operations, including water sampling and paying annual compensation. One company is making efforts to minimize pollution while keeping the community informed of its plans. It is also considering some form of compensation for disruption to traplines.

A number of companies indicated that no concerns had been identified to them. Environmental concerns identified to other companies related to drilling, tailings disposal and dust; pollution of traditional fishing waters; hauling of toxic substances; health and safety; concern over emissions; and, air and water control. Fear of the unknown effects of radiation was identified by one company. Another company stated that concern about a food fishery arose due to lack of understanding of the company's water recovery program. This is now being addressed through proactive communications and site tours for Aboriginal people. Other problem areas identified to companies related to the maintenance of traditional pursuits, lack of community involvement in the operation and increased health and social problems.

2.22 Aboriginal Attitudes on Participation in Mining

Several communities were very positive about employment in mining, in some cases linking it to the need for jobs and the need to support traditional activities. Others indicated that their approval of mining was conditional, depending upon such mitigating factors as the provision of training, a shortened work week or assurance of no unacceptable long-term social or environmental impacts. In one case, the band emphasized the need to share in the profits of mining and to be involved in planning and operations since it will still be there once the mine goes.

Some negative attitudes were expressed based on lack of business and employment opportunities; concerns raised by TV/media reports; and, pollution fears. One community indicated that the benefits from relatively limited local employment were outweighed by the cost of having a mine nearby. One comment was to the effect that the companies only provide labour opportunities for Aboriginal people, they make money and then move on. Two responses indicated no desire to be involved in mining, one preferring to take advantage of

other opportunities in logging, sawmills, food and fish which are considered to be more promising.

2.23 Factors to Increase Participation Levels

Communities and reserves identified Increased Education/Skill level most often as a major factor which would contribute to greater Aboriginal participation. Other factors which ranked about equally were Increased Opportunity for Aboriginal Participation, Increased Access to Education/Training, Recruitment Procedure of Company, Community Understanding of Mineral Activities and Company Policies. Identified less often were Government Policies and Programs and Aboriginal Communities Closer to Project. Other factors mentioned included union requirements, creation of a cooperative environment in which to work, mine tours and sponsorship of recreational facilities on a reserve. Three said that there were no factors which would increase Aboriginal participation.

Companies also identified Increased Education/Skill level most often as a major factor which would contribute to greater Aboriginal participation. Another factor frequently identified was Community Understanding of Mineral Activities followed by Increased Access to Education/Training, Increased Opportunities for Investment, Aboriginal Communities Closer to Project, Company Policies, Recruitment Procedures of Company and Government Programs and Policies. Additional factors identified by companies included improved motivation and initiative by Aboriginal people to obtain employment; more housing available for Aboriginal employees; and, increased acceptance by Aboriginal people of progression from low-level jobs to better ones and longer term commitment to the employer. One recommendation was to increase awareness and understanding of the mining industry by students through classroom projects which would include field trips to local operations.

2.24 Further Comments

Both questionnaires provided a section for summary comments or statements on anything which the communities and reserves or the mining companies felt had been missed or inadequately covered. The following summary includes comments from individual mines or communities and reserves which address issues not covered in the previous responses. Comments which only restated or elaborated on previous answers are not included.

Communities:

Aboriginal people want employment, not welfare.

There is a concern about the environment but there is also a desire to be part of a wage earner group. Since trapping and fishing are no longer viable in the region, mines offer an alternative source of income even though many people would rather not work there because it means leaving home.

Cross-cultural training should be implemented by someone who is unbiased. Employment should not be offered to either southerners or Aboriginal people if they refuse to take the training.

Annual surveys should be done in each community to determine local interest in obtaining employment and in what field. The mine and the community should negotiate with the two levels of government to seriously consider training and upgrading for employment.

The onus is on government to work with the Aboriginal communities, with respect to concerns expressed by residents, in order to ensure positive solutions.

Mining jobs are important to the north. Mines must be more open to hiring Native people. It has been proven that Aboriginal people can contribute significantly to the good of the mining industry and this should be recognized and encouraged.

Companies:

In general, the company's Aboriginal employees do not look for long-term employment, although there are notable exceptions. This has been accommodated by offering temporary employment in blocks of about six weeks.

One company which does not currently employ Aboriginal people feels an obligation to assimilate them into its workforce. Their absence is attributed to few applications due, in part, to a lack of conscious effort on the company's part. The questionnaire has triggered this awareness in the company and consideration will be given to employing Natives in the future.

Native people should recognize mineral resources as a source of benefits and be more supportive of the mining industry. They should take a more pro-active role in establishing training programs which would open up opportunities for them.

Paternalistic policies must give way to motivated initiatives.

One company notes that there are many qualified Aboriginal people in the region. In the next 5 years, normal processes will be followed for employment and business contracts. The company has been successful because of its policy of moving from "special" to "normal" or "dependent" to "independent". Strong internal support for this program has always been demonstrated from the President's level.

This small mine has been a leader in the use of Aboriginal peoples in its workforce and in assisting in developing Aboriginal businesses. Some significant credit must go to the local people and their leaders for their approach to education and development. The relationship between the local people and the company has been positive and could be used as an example for future developments.

ADDENDUM A

MINING COMPANY SURVEY
INTERGOVERNMENTAL WORKING GROUP ON THE MINERAL INDUSTRY
SUBCOMMITTEE ON
NATIVE PARTICIPATION IN MINING

Position/Title of respondent:

All information will be **CONFIDENTIAL** (i.e., the source of specific responses will not be revealed in the write-up of this study).
For the purposes of this survey, "Aboriginal" and "Native" both refer to the following populations: Status and Non-status Indians, Metis, and Inuit.
NOTE: Extra sheets may be attached if more space is needed for any of the questions.

1. **During 1990, in which mineral-related activities did your company participate?**
   ( ) Exploration
   ( ) Development
   ( ) Mining/milling
   ( ) Other(s) (specify)
   If mining/milling:
   MINE TYPE:
   ( ) Open-pit
   ( ) Underground
   ( ) Both
   MAJOR PRODUCTS:

2. **In 1990, how many people were employed directly in each of the following mineral-related activities?**

ACTIVITY	NUMBER OF EMPLOYEES *		
	PART-TIME *	FULL-TIME *	SEASONAL *
Exploration			
Development			
Mining/mining			
Other(s) (specify)			

   *** If your company had other types of employment arrangements that are not listed above, please provide details.**

3. **Has your company directly employed Aboriginal people?**
   ( ) Never **PROCEED TO QUESTION 6.**
   ( ) In previous years, but **not** 1990 **PROCEED TO QUESTION 4.**
   ( ) In 1990
   In 1990, how many Aboriginal people were employed directly by your company in each of the following mineral-related activities?

ACTIVITY	NUMBER OF EMPLOYEES *		
	PART-TIME *	FULL-TIME *	SEASONAL *
Exploration			
Development			
Mining/milling			
Other(s) (specify)			

*** If your company had other types of employment arrangements that are not listed above, please provide details.**

4. What are/were the main jobs filled by the Aboriginal employees that were hired directly by your company?

( ) Management
( ) Clerical
( ) Labourer
( ) Trades
( ) Truck driver/Equipment operator
( ) Maintenance worker
( ) Apprenticeships
( ) Site security
( ) Camp worker
( ) Food services
( ) General construction/contracting
( ) Other(s) (specify)

5. In terms of advancement within your company, how would you describe the progress made by the majority of Aboriginal employees (e.g., of all Aboriginal employees who have enroled in apprenticeship or other training programs, approximately what percentage of them has successfully completed the program)?

6. Aside from direct employment in mining-related activities, has your company had any contracts with Aboriginal-owned businesses?

( ) Never **PROCEED TO QUESTION 7.**
( ) In previous years, but **not** 1990
( ) In 1990

Please indicate the type(s) of business(es) with which your company has had contracts. (check all that apply)

Aboriginal-owned Businesses

( ) Trucking services
( ) Air services
( ) Catering
( ) Line cutting/geophysics
( ) Equipment rental
( ) Guiding
( ) Claim staking
( ) Janitorial
( ) Laboratory work
( ) General construction/contracting
( ) Site security
( ) Other(s) (specify)

7. When contracting, do you have an Aboriginal content criteria?

( ) No **PROCEED TO QUESTION 8.**
( ) Yes

If Yes, please elaborate.

8. Have there been any problems related to the employment or contracting of Aboriginal people at your operations?

( ) No **PROCEED TO QUESTION 9.**
( ) Yes

If Yes, please indicate the nature of the problem(s), and elaborate on the step(s) taken by your company to overcome them.

NATURE OF PROBLEM(S)

STEPS TAKEN TO OVERCOME PROBLEM(S)

9. In your opinion, what are the barriers that prevent the hiring or contracting of Aboriginal employees? Check all that apply.

( ) There are no such barriers **PROCEED TO QUESTION 10.**
( ) Inadequate education
( ) Lack of experience in related employment
( ) Language difficulties
( ) Cost of training
( ) Very few or no job applications received from Aboriginal people
( ) Other(s) (specify)

10. In your opinion, what are the barriers that inhibit Aboriginal people from participating in mining and related activities? Check all that apply.

( ) There are no such barriers **PROCEED TO QUESTION 11.**
( ) Limited access to required education/training
( ) Lack of experience in related employment
( ) Language difficulties
( ) Peer pressure opposed to participation in mining activities
( ) Misunderstanding of application/interview procedure
( ) Union membership regulations
( ) Availability/cost of transportation to and from the work site
( ) Not being informed of job openings
( ) No desire to work in a mine or related operation
( ) Other(s) (specify)

11. What is the minimum level of schooling required for lowest entry-level employees?

Grade:

12. Does your company hire or contract Aboriginal people who are not fluent or literate in English or French?

( ) No **PROCEED TO QUESTION 13.**
( ) Yes

If Yes, does your company provide language training for such employees?

( ) No
( ) Yes

Please elaborate on any other means by which your company accommodates language differences between Aboriginal and non-Aboriginal employees.

13. Are you aware of any federal, provincial/territorial or local programs or services designed to assist Aboriginal people in gaining employment, training, or skills development (e.g., job training or apprenticeship programs)?

( ) No PROCEED TO QUESTION 14.
( ) Yes

If Yes,

a. Has your company utilized any federal programs or services to assist Aboriginal people in gaining employment with your company?

( ) No
( ) Yes

b. Has your company utilized any provincial/territorial programs or services to assist Aboriginal people in gaining employment with your company?

( ) No
( ) Yes

c. Has your company utilized any local programs or services to assist Aboriginal people in gaining employment with your company?

( ) No
( ) Yes

14. Has your company initiated any training, education or skills development programs for Aboriginal people?

( ) No PROCEED TO QUESTION 15.
( ) Yes

If Yes, please elaborate and comment on how successful these programs have been.

15. Is this operation unionized?

( ) No PROCEED TO QUESTION 16.
( ) Yes

If Yes, are there any special provisions in effect, initiated by either your company or the union, to assist Aboriginal people in gaining employment related to the operation? Please elaborate.

16. When advertising job openings or publishing other notices, which of the following does your company employ?

	LOCAL	NON-LOCAL
English/French media		
Aboriginal language media		
Other(s) (specify)		

17. Does your company employ a Native Affairs Coordinator?

( ) No PROCEED TO QUESTION 18.
( ) Yes

If Yes, is the Coordinator located on-site ( ) or off-site ( )?

Is the Coordinator of Aboriginal ancestry?

( ) No
( ) Yes

Please explain the Coordinator's duties.

18. Are there any people of Aboriginal ancestry on your company's hiring staff?

( ) No
( ) Yes

19. Does/has your company hire(d) any Aboriginal employees through an agency or other third party?

( ) No PROCEED TO QUESTION 18.
( ) Yes

If Yes, were all your Aboriginal employees hired through the agency or other third party?

( ) No
( ) Yes

Was the agency or other third party Aboriginal-operated?

( ) No
( ) Yes

Please describe your company's involvement with the agency or third party.

20a. What is the nature of your company's procedure for interviewing potential employees? Check all that apply.

( ) Formal
( ) Informal
( ) Telephone
( ) In person
( ) Other(s) (specify)

b. Which languages are used to conduct the interviews? Check all that apply.

( ) English
( ) French
( ) Aboriginal language(s) (specify)
( ) Other(s) (specify)

c. If conducted in person, where are the interviews held?

( ) Company headquarters
( ) Minesite
( ) Local community/reserve
( ) Other(s) (specify)

21. How would you classify your operation? Check one.

( ) Camp: fly in/out
( ) Camp: bus in/out
( ) Townsite: bus in/out

( ) Townsite: private transportation in/out
( ) Other(s) (specify)

22. Are there special provisions at your operation for Aboriginal employees' practise of traditional pursuits?
( ) No PROCEED TO QUESTION 23.
( ) Yes
If Yes, please elaborate.

23. If your operation is isolated (i.e., bus or fly in/out), what is/are the normal work rotation(s)?
Has/have the work rotation(s) been set to accommodate the concerns and/or traditional pursuits of Aboriginal employees?
( ) No PROCEED TO QUESTION 24.
( ) Yes

If Yes, give details and explain on what basis the rotation(s) was/were determined.

24. Has your company initiated any cross-cultural awareness training for Aboriginal and/or non-Aboriginal employees?

Aboriginal Employees:	Non-Aboriginal Employees:
( ) No	( ) No
( ) Yes	( ) Yes

If Yes for either or both, please elaborate and comment on how effective such training has been.

25. Prior to the commencement of your mineral-related activity, did your company undertake any information/consultation processes with Aboriginal individuals, Aboriginal communities or Aboriginal groups?
( ) No PROCEED TO QUESTION 26.
( ) Yes
If Yes, please indicate whether it was individuals, communities or groups consulted, and the nature of the consultation process(es).

26. Is your company currently undertaking ongoing information/consultation processes with Aboriginal individuals, Aboriginal communities or Aboriginal groups?
( ) No PROCEED TO QUESTION 27.
( ) Yes
If Yes, please indicate whether it is individuals, communities or groups being consulted, and the nature of the consultation process(es).

27. Prior to the commencement of the mineral activity, did your company conduct a socio-economic impact study of the area(s) affected by your operation?
( ) No PROCEED TO QUESTION 28.
( ) Yes
If Yes, please explain the major findings.

28. Prior to the commencement of the mineral activity, did your company enter into a development/socio-economic agreement with government and/or with a local Aboriginal group or organization?

( ) No **PROCEED TO QUESTION 30.**
( ) Yes

If Yes,

a. Why was the agreement negotiated?

( ) Unknown
( ) Mandated by government
( ) Voluntary

b. Who are the signatories to the agreement? Check all that apply.

( ) The community/reserve
( ) The company
( ) Federal government
( ) Provincial government
( ) Other(s) (specify)

c. What are the major obligations of each of the signatories?

29. If there is a development/socio-economic agreement, how effective has it been?

30. Has your company considered or negotiated any business partnerships, joint ventures or other type of financial agreements with Aboriginal people or Aboriginal-owned businesses?

( ) No **PROCEED TO QUESTION 31.**
( ) Yes

If Yes, please elaborate.

31. Please identify the main benefits to your company of Aboriginal participation in your operations. Check all that apply.

( ) No benefits to the company **PROCEED TO QUESTION 32.**
( ) Access to local workforce
( ) Fewer delays/shorter start-up time
( ) Lower operating and transportation costs
( ) Better labour relations
( ) Access to government programs
( ) Nearby sources of goods and services
( ) A cooperative approach to exploration on Aboriginal lands
( ) Better public image
( ) Good business practice
( ) Good bottom line
( ) Other(s) (specify)

32. **Please identify the main costs to your company of Aboriginal participation.** Check all that apply.

( ) No costs to the company **PROCEED TO QUESTION 33.**
( ) More complex personnel relations
  ( ) Native Affairs Coordinator
  ( ) Cross-cultural training programs
( ) Delays in start-up due to increased training time
( ) Increased government involvement
( ) Higher costs
( ) Lower productivity due to lack of mining/milling experience
( ) Need to translate signs etc.
( ) Other(s) (specify)

33. **Please identify the main costs to or concerns of the local Aboriginal community(s)/reserve(s) as a result of your operation(s).** Check all that apply.

( ) No costs/concerns have been identified **PROCEED TO QUESTION 34.**
( ) Environmental concerns (Please elaborate)
( ) Problems with maintaining traditional pursuits
  ( ) Loss of wildlife
  ( ) Change of wildlife migratory patterns
  ( ) Disruption of trap lines
  ( ) Other(s) (specify)
( ) Lack of community involvement in the operation
( ) Increased health concerns
( ) Increased social problems
( ) Other(s) (specify)

34. **Please identify the main factors which would contribute to greater levels of Aboriginal participation in mining and related activities.** Check all that apply.

( ) There are no factors which would do so **PROCEED TO QUESTION 35.**
( ) Aboriginal communities closer to project
( ) Increased education/skill level of Aboriginal people
  ( ) Increased access to education/training
( ) Government policies
( ) Government programs
( ) Company policies
( ) Recruitment procedures of company
( ) Union requirements
( ) Community understanding of mineral activities
( ) Increased opportunity for Aboriginal participation in joint ventures or other investment
( ) Other(s) (specify)

35. **If anything has been missed, or if you have any further comments, please elaborate below.**

ADDENDUM B

ABORIGINAL COMMUNITY/RESERVE SURVEY
INTERGOVERNMENTAL WORKING GROUP ON THE MINERAL INDUSTRY
SUBCOMMITTEE ON
NATIVE PARTICIPATION IN MINING

Position/Title of respondent:

All information will be **CONFIDENTIAL** (i.e., the source of specific responses will not be revealed in the write-up of this study).
For the purposes of this survey, "Aboriginal" and "Native" both refer to the following Aboriginal populations: Status and Non-status Indians, Metis, and Inuit.

NOTE: Extra sheets may be attached if more space is needed for any of the questions.

1. **Please identify the geographical area in which people from your community/reserve practise traditional pursuits, and indicate the activities involved.**

2. **Have any mining or mineral-related activities taken place in the area used for traditional pursuits identified in Question 1?**
   ( ) No
   ( ) Yes

3. **Have any people from your community/reserve been involved in mineral-related activities within the community/reserve, in the area in which traditional pursuits are practised, or elsewhere?**
   ( ) Never **PROCEED TO QUESTION 7.**
   ( ) In previous years, but **not** 1990 **PROCEED TO QUESTION 4.**
   ( ) In 1990
   In 1990, which of the following activities were people from your community/reserve involved in, and where?

ACTIVITY	**IN COMMUNITY/ RESERVE**	**AREA OF TRADITIONAL PURSUIT**	**ELSEWHERE**
Exploration			
Development			
Mining/milling			
Other(s) (specify)			

4. **In 1990, approximately how many people from your community/reserve were employed directly by the company(s) operating each of the mineral-related activities identified in Question 3?**

ACTIVITY	NUMBER OF EMPLOYEES *		
	PART-TIME *	FULL-TIME *	SEASONAL *
Exploration			
Development			
Mining/milling			
Other(s) (specify)			

*** If the company(s) had other types of employment arrangements that are not listed above, please provide details.**

5. What are/were the main jobs filled by people from your community/reserve who were hired directly by the company(s) referred to in Question 4?

( ) Management
( ) Clerical
( ) Labourer
( ) Trades
( ) Truck driver/Equipment operator
( ) Maintenance worker
( ) Apprenticeships
( ) Site security
( ) Camp worker
( ) Food services
( ) General construction/contracting
( ) Other(s) (specify)

6. In terms of advancement within the company(s), how would you describe the average progress made by Aboriginal employees?

7. Aside from direct employment in mining-related activities, did any local Aboriginal-owned businesses have contracts with the mining company(s)?

( ) Never **PROCEED TO QUESTION 8.**
( ) In previous years, but not 1990
( ) In 1990

Please indicate which types of businesses had contracts with the mining company(s). (check all that apply)

Aboriginal-owned Businesses

( ) Trucking services
( ) Air services
( ) Catering
( ) Line cutting/geophysics
( ) Equipment rental
( ) Guiding
( ) Claim staking
( ) Janitorial
( ) Laboratory work
( ) General construction/contracting
( ) Site security
( ) Other(s) (specify)

8. Have people from your community/reserve encountered any problems while employed at or contracted with the identified mining and mineral-related operations?

( ) No PROCEED TO QUESTION 9.
( ) Yes

If Yes, please indicate the nature of the problem(s), and elaborate on the step(s) taken by the company and/or your community/reserve to overcome them.

NATURE OF PROBLEM(S)

STEPS TAKEN TO OVERCOME PROBLEM(S)

9. In your opinion, what are the barriers that inhibit Aboriginal people from participating in mining and related activities? Check all that apply.

( ) There are no such barriers PROCEED TO QUESTION 10.
( ) Limited access to required education/training
( ) Lack of experience in related employment
( ) Language difficulties
( ) Peer pressure opposed to participation in mining activities
( ) Misunderstanding of application/interview procedure
( ) Union membership regulations
( ) Availability/cost of transportation to and from the work site
( ) Not being informed of job openings
( ) No desire to work in a mine or related operation
( ) Other(s) (specify)

10. In your opinion, what are the barriers that prevent companies from hiring or contracting Aboriginal people? Check all that apply.

( ) There are no such barriers PROCEED TO QUESTION 11.
( ) Inadequate education
( ) Lack of experience in related employment
( ) Language difficulties
( ) Cost of training
( ) Very few or no job applications submitted by Aboriginal people
( ) Other(s) (specify)

11. What is the average level of schooling attained by people from your community/reserve?

Grade:

What is the minimum level of schooling attained by people from your community/reserve who are hired by the company(s) referred to in Question 4?

Grade:

12. **Is complete secondary education available in your community/reserve?**

( ) Yes **PROCEED TO QUESTION 14.**

( ) No

If No, what is the highest grade available?

13a. **If complete secondary education is unavailable in your community/reserve, please provide details regarding attendance at facilities elsewhere.**

i. Distance from community to secondary school:

ii. Means of transportation used to reach the facility:

iii. Do students have to reside outside the community/reserve to attend classes?

( ) No

( ) Yes

b. **How do people from your community/reserve feel about having to travel outside the community/reserve to continue their secondary education?**

14a. **Is Adult Education available in your community/reserve?**

( ) Yes **PROCEED TO QUESTION 15.**

( ) No

If No, please provide details regarding the nearest such facility.

i. Distance from community to nearest Adult Education facility:

ii. Means of transportation used to reach the facility:

iii. Do students have to reside outside the community/reserve to attend classes?

( ) No

( ) Yes

iv. Are students responsible for travel and accommodation costs?

( ) No

( ) Yes

b. **Has Adult Education been used by people from your community/reserve to obtain employment related to the mining and mineral-related activities identified in Questions 2 and 3?**

( ) No

( ) Yes

Please explain why or why not.

15. **Are there any facilities accessible to people from your community/reserve which provide training that may be relevant to employment in mining and related activities?**

( ) No **PROCEED TO QUESTION 16.**

( ) Yes

If Yes, what type(s) of training is/are provided?

Have these facilities been used by people from your community/reserve to obtain employment related to the mining

and mineral-related activities identified in Questions 2 and 3?

( ) No
( ) Yes

Please explain why or why not.

16. Are you aware of any federal, provincial/territorial or local programs or services designed to assist Aboriginal people in gaining employment, training, or skills development (e.g., job training or apprenticeship programs)?

( ) No PROCEED TO QUESTION 17.
( ) Yes

If Yes,

a. Have people from your community/reserve utilized any federal programs or services to gain employment related to the mineral operation(s)?

( ) No
( ) Yes

b. Have people from your community/reserve utilized any provincial/territorial programs or services to gain employment related to the mineral operation(s)?

( ) No
( ) Yes

c. Have people from your community/reserve utilized any local programs or services to gain employment related to the mineral operation(s)?

( ) No
( ) Yes

17. Are you aware of any federal, provincial/territorial or local programs or services designed to assist Aboriginal people with business development?

( ) No PROCEED TO QUESTION 18.
( ) Yes

If Yes,

a. Have people from your community/reserve utilized any federal programs or services to develop businesses?

( ) No
( ) Yes

b. Have people from your community/reserve utilized any provincial/territorial programs or services to develop businesses?

( ) No
( ) Yes

c. Have people from your community/reserve utilized any local programs or services to develop businesses?

( ) No
( ) Yes

18. To your knowledge, have any of the companies initiated their own training, education or skills development programs for Aboriginal people?

( ) Unknown PROCEED TO QUESTION 19.
( ) No PROCEED TO QUESTION 19.
( ) Yes

If Yes, please elaborate and comment on how successful these programs have been.

19. To your knowledge, are any of the identified operations unionized?

( ) Unknown PROCEED TO QUESTION 20.
( ) No PROCEED TO QUESTION 20.
( ) Yes

If Yes, are there any special provisions in effect, initiated by either the company(s) or the union(s), to assist Aboriginal people in gaining employment related to the operation(s)? Please elaborate.

20. How did your community/reserve first learn about the operation(s) identified in Questions 2 and 3?

Use the following codes:

A The company
B English/French media
C Aboriginal language media
D The licensing process
E Other(s) (specify)

ACTIVITY	CODE
Exploration	
Development	
Mining/milling	
Other(s) (specify)	

21. Did the company(s) keep your community/reserve satisfactorily informed about the mining activities identified in Questions 2 and 3?

( ) No
( ) Yes

If No, what should the company(s) have done to maintain information flow?
If Yes, please indicate how this was accomplished.

22. How would you rate the communicative effectiveness of job postings and other notices published by the mining or mineral-related company(s)? Please explain.

23. To your knowledge, have any of the companies made any efforts to accommodate the traditional pursuits of Aboriginal employees and/or cultural differences between Aboriginal and non-Aboriginal workers?

( ) Unknown **PROCEED TO QUESTION 24.**
( ) No **PROCEED TO QUESTION 24.**
( ) Yes

If Yes, please elaborate and comment on how successful such efforts have been.

24. To your knowledge, have any of the companies initiated any cross-cultural awareness training for Aboriginal and/or non-Aboriginal employees?

Aboriginal Employees:	Non-Aboriginal Employees:
( ) Unknown	( ) Unknown
( ) No	( ) No
( ) Yes	( ) Yes

If Yes for either or both, please elaborate and comment on how effective such training has been.

25. Do any of the companies referred to in Question 3 employ a Native Affairs Coordinator?

( ) Unknown **PROCEED TO QUESTION 27.**
( ) No **PROCEED TO QUESTION 27.**
( ) Yes

If Yes, how many of the companies?

26. Please describe the nature of any contacts that people from your community/reserve have had with the Native Affairs Coordinator(s) identified in Question 25.

27. Prior to the commencement of the mineral-related activity, did the company(s) undertake any information/consultation processes with your community/reserve?

( ) Unknown **PROCEED TO QUESTION 28.**
( ) No **PROCEED TO QUESTION 28.**
( ) Yes

If Yes, please indicate how many company(s), and explain the nature of the consultation process(es).

28. Is the company currently undertaking ongoing information/consultation processes with your community/reserve?

( ) Unknown **PROCEED TO QUESTION 29.**
( ) No **PROCEED TO QUESTION 29.**
( ) Yes

If Yes, please indicate how many company(s), and explain the nature of the consultation process(es).

29. **Prior to the commencement of the mineral activity, did the company(s) concerned enter into a development/socio-economic agreement with the people of your community/reserve and/or with government?**

( ) Unknown **PROCEED TO QUESTION 31.**
( ) No **PROCEED TO QUESTION 31.**
( ) Yes

If Yes,

a. Why was the agreement negotiated?

( ) Unknown
( ) Mandated by government
( ) Voluntary

b. Who are the signatories to the agreement? Check all that apply.

( ) The community/reserve
( ) The company
( ) Federal government
( ) Provincial government
( ) Other(s) (specify)

c. To your knowledge, what are the major obligations of each of the signatories?

30. **If there is a development/socio-economic agreement, how effective has it been?**

31. **Have any of the companies considered or negotiated any business partnerships, joint ventures or other financial agreements with Aboriginal people or local Aboriginal-owned businesses?**

( ) Unknown **PROCEED TO QUESTION 32.**
( ) No **PROCEED TO QUESTION 32.**
( ) Yes

If Yes, please elaborate.

32. **Please identify the main benefits of the identified mineral developments for the people of your community/reserve.** Check all that apply.

( ) No benefits to the community/reserve **PROCEED TO QUESTION 33.**
( ) Improving quality of life
( ) Employment opportunities
( ) Training and development of transferable skills
( ) Local business opportunities
( ) Increased cash infusion to the community
( ) Support for maintenance of traditional pursuits
( ) Increased influence on local mineral development
  ( ) Through financial involvement
  ( ) Through regulatory involvement
( ) Improved transportation
  ( ) Air services
  ( ) Year round road
  ( ) Winter road

( ) Less expensive supplies
( ) Improved communications
( ) Other(s) (specify)

33. Please identify the main costs to individuals as a result of their participation in the mineral development. Check all that apply.

( ) No costs to individuals **PROCEED TO QUESTION 34.**
( ) Loss of ability to practice traditional pursuits
( ) Increased health concerns
( ) Increased social problems
( ) Increased family problems
( ) Other(s) (specify)

34. Please identify the main costs to your community/reserve as a result of the mineral development. Check all that apply.

( ) No costs to the community/reserve **PROCEED TO QUESTION 35.**
( ) Environmental costs
  ( ) Water pollution
  ( ) Air pollution
  ( ) Soil/subsurface pollution
  ( ) Other(s) (specify)
( ) Problems with maintaining traditional pursuits
  ( ) Loss of wildlife
  ( ) Change of wildlife migratory patterns
  ( ) Disruption of trap lines
  ( ) Other(s) (specify)
( ) Other(s) (specify)

35. With respect to negative impacts identified in Questions 33 and 34, was the mining company notified?

( ) No **PROCEED TO QUESTION 36.**
( ) Yes

If Yes,

a. Which of the negative impacts identified above were discussed with the company?

b. Did the company attempt to seek a method of mitigating the adverse effects of its operation?

( ) No **PROCEED TO QUESTION 36.**
( ) Yes

If Yes, please elaborate.

36. How do people in your community/reserve feel about Aboriginal participation in mining and related activities?

37. **Please identify the main factors which would contribute to greater levels of Aboriginal participation in mining and related activities.** Check all that apply.

( ) There are no factors which would do so **PROCEED TO QUESTION 28.**
( ) Aboriginal communities closer to project
( ) Increased education/skill level of Aboriginal people
( ) Increased access to education/training
( ) Government policies
( ) Government programs
( ) Company policies
( ) Recruitment procedures of company
( ) Union requirements
( ) Community understanding of mineral activities
( ) Increased opportunity for Aboriginal participation in joint ventures or other investment
( ) Other(s) (specify)

38. **If anything has been missed, or if you have any further comments, please elaborate below.**

Appendix H

Analysis of Responses to Questionnaires on Aboriginal Participation in Mining

APPENDIX H

ANALYSIS OF RESPONSES TO QUESTIONNAIRES ON ABORIGINAL PARTICIPATION IN MINING

1. INTRODUCTION

In seeking to solicit the information and opinions required to meet the study's objectives regarding Aboriginal participation in mining, two separate questionnaires were developed (Appendix G, Addendum A, p. 115 and Addendum B, p. 123).

In particular, the questionnaires sought to identify:

- real and perceived benefits and costs to both companies and Aboriginal people of Aboriginal participation in mining
- real and perceived barriers to the participation of Aboriginal people in mining
- ways in which the traditional Aboriginal lifestyle can be integrated with the wage-based economy, and
- ways that governments, companies, Aboriginal groups and individuals can, or may, take to boost Aboriginal participation in mining.

The wide variety of questions allowed the Sub-committee to analyze and examine some of these objectives. Other aspects of this issue were also brought to the forefront. The majority of the costs, benefits and barriers are fully identified in Appendix G (p. 95).

Four recurring themes were identified through the analysis of the completed questionnaires:

1. The level of Aboriginal participation is directly related to the location of the minesite. It is much more likely that those mines located in remote areas (fly-in/fly-out mines) will be able to attain a relatively higher level of Aboriginal participation than those mines located in or near townsites.

2. The development of socio-economic agreements. Those companies which have entered into these types of agreements have consistently succeeded in having relatively high levels of Aboriginal participation in and acceptance of their operations.

3. Aboriginal people feel that almost all mines could do a better job of communicating with them. Better communications could result in increased acceptance of the mining operation on the part of the Aboriginal people and they may achieve higher levels of employment.

4. While many Aboriginal people have indicated that they are not particularly interested in working in a mine, they are interested in developing businesses to provide services to mines. This represents an opportunity for mines to increase Aboriginal participation even when increased employment is unlikely.

2. MINESITE LOCATION

2.1 Fly-in/fly-out Minesites

Fly-in/fly-out operations[8] have a number of characteristics which were identified as contributing to the level of Aboriginal participation in their operations. These can be regarded as barriers or costs or benefits depending upon the context in which they are viewed. However, the result of these considerations is that fly-in/fly-out operations have a far higher level of Aboriginal participation than townsite operations.

Fly-in/fly-out Characteristics:

. Location

From the point of view of Aboriginal participation, many companies indicated that being isolated represents a benefit to them. Local Aboriginal populations are used to and prefer to live in their traditional areas and are viewed by mining companies as a reliable source of employees. Over time, local Aboriginal communities will represent a ready pool of trained employees. The importance of this trained pool is highlighted by the comment from one operator, which has a longer rotation, that it had "flexed" its employment policy by offering Aboriginal employees more temporary employment for shorter blocks of time. This innovative policy has assisted in keeping Aboriginal employment high.

. Transportation

Because of the remote location of minesites, employees must be flown-in. Aboriginal people represent the closest source of potential employees. Their closer location, relative to other sources of labour, has been identified by the operators as a major cost saving benefit. In some jurisdictions, it is less expensive to provide transportation on small aircraft to a number of nearby locales than on larger aircraft to a more distant pick-up point.

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[8] Those remote operations that use other transportation modes such as a bus are also represented in this paper by the term fly-in/fly-out.

. Work Rotation

In recognition of the hardship of working in these isolated locations, operators use work rotations whereby the employees spend an extended period at the mine, working increased hours, followed by an extended leave. While these rotations are costly for the companies (with the cost rising as the length of rotations shortens), they were identified as representing a definite attraction for Aboriginal employees. Many noted that the ability to spend longer periods throughout the year away from the minesite (as opposed to weekends for employees of townsite operations) enabled them to earn a living and still practice their traditional lifestyle. A number of companies even offer their Aboriginal employees shorter work rotations over other workers. However, Aboriginal people did identify being separated from their families as one of the major barriers to working in a remote mine.

2.2 Townsite Operations

Townsite operations have very different characteristics from fly-in/fly-out operations, many of which were identified as barriers or disincentives to attaining the same high levels of Aboriginal participation as fly-in/fly-out operations.

Townsite Characteristics:

. Work Schedule

The work schedule of a townsite operation is a function of the location and the make-up of its labour force. These operations generally work on a forty hour per week, fifty week per year shift schedule. While this schedule is most convenient for the local non-Aboriginal work force, it does not afford Aboriginal employees the blocks of time necessary to allow them to practice their traditional lifestyle.

. Location

These operations are in or close to populated centres, a definite benefit to the operator who has a skilled labour supply close to the mine. However, it was made very clear by the respondents from the Aboriginal communities and reserves that the necessity to move to these larger communities to work in a mine is a barrier. Reasons identified include the loss of the ability to practice the traditional lifestyle and problems of adapting to a different culture.

. Transportation

Because the cost of transportation both to the mine (in most cases) and back to the home community is borne by the employee, this was identified by a number of Aboriginal respondents as a barrier to their participation in townsite operations.

3. SOCIO-ECONOMIC AGREEMENTS

The majority of fly-in/fly-out operations and some townsite operations have entered into socio-economic agreements designed to ensure the maximum amount of Aboriginal participation. Generally, the mines that have entered into these agreements have a positive relationship with the local Aboriginal communities. However, based upon participation rates, these agreements appear to have been much more effective at fly-in/fly-out operations than at townsite operations. It would appear that the factors identified above have an impact on determining the effectiveness of a socio-economic agreement in ensuring high levels of Aboriginal employment.

4. COMMUNICATIONS

Although many companies stated that they had extensive communications with the local Aboriginal peoples, there was a general feeling among the communities/reserves that companies do not keep them properly informed of what is happening. One respondent stated that the community had initiated contact with the company rather than wait for the company to make the first move.

A number of communities/reserves stated that in the early stages of a development the company did not inform them of what was happening on or near their traditional lands. If the company had informed them of their intentions, the local people would have understood what was happening and would be more likely to support the company at regulatory or public hearings. Opposition by local communities can result in unnecessary delays and costs to the development. At the time the questionnaire was being completed, one community reported that something was happening in the immediate area, but that no report had been made by the company.

Although it is vital that communities/reserves be informed of a company's intentions at an early stage, many respondents indicated that continuation of good communications throughout the life of the project was equally important.

A number of community respondents also indicated that they were not provided with sufficient information about job openings at the minesite. A natural result of this is that a number of companies noted that they do not get many applications. The companies interpreted this as a lack of interest in working in the industry and noted it as a barrier to increased Aboriginal participation.

The lack of communication was also apparent from little awareness by Aboriginal respondents of the broader aspects of an operation such as socio-economic agreements, unions, cross cultural training or company run training programs. It was noted by many Aboriginal respondents that one way to increase Aboriginal participation would be to increase the community's understanding of mining.

5. ABORIGINAL BUSINESS OPPORTUNITIES

Many of the responses from the communities/reserves indicated that although they realized that mining offered the potential for employment, many Aboriginal people would prefer to participate in the industry by providing services through their own businesses.

While all of the fly-in/fly-out operations stated that they had contracts with Aboriginal-owned businesses, less than half of the townsite operations reported such contracts. The desire to be more entrepreneurial provides an opportunity for townsite (and fly-in/fly-out) mines to increase Aboriginal participation.

6. CONCLUSIONS

The main conclusion from the study is that - **IT CAN BE DONE!** Higher levels of Aboriginal participation in the mining industry can be achieved. Companies that have attempted to increase participation have had very positive results. Some communities indicated satisfaction with their level of participation both in direct employment and in providing service businesses.

On the one hand, in fly-in/fly-out operations there are economic incentives for the operators to have a high level of Aboriginal participation. On the other hand, there are definite barriers to townsite operations attaining a high level of Aboriginal employment. However, all mines can seek to increase Aboriginal participation though better communications, socio-economic agreements and increased contracts with Aboriginal businesses.

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48e CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

Rapport sur la participation des autochtones à l'exploitation minière

Fédéral

HALIFAX (NOUVELLE-ÉCOSSE)
Du 22 au 24 septembre 1991

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RAPPORT SUR

LA PARTICIPATION DES AUTOCHTONES

À L'EXPLOITATION MINIÈRE

PHASE II

C'EST FAISABLE

présenté par

Le Sous-comité
du groupe de travail interministériel
sur l'industrie minière

Novembre 1991

LE SOUS-COMITÉ DU GROUPE DE TRAVAIL INTERMINISTÉRIEL SUR L'INDUSTRIE MINIÈRE SUR LA PARTICIPATION DES AUTOCHTONES À L'EXPLOITATION MINIÈRE

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Also available in English.

Sommaire

Le projet, la participation des autochtones à l'industrie minière, fut initié à la demande des ministres fédéraux/provinciaux/territoriaux participants à l'assemblée annuelle des Ministres des mines tenu en août 1989. Les ministres des mines ont un groupe de travail qui analyse les sujets de préoccupation et donne un compte rendu annuel. Ce Groupe de travail interministériel sur l'industrie minière (GTIIM), a établi un sous-comité chargé d'étudier la nature de la participation autochtone à l'industrie minière au Canada.

Presque toutes les provinces/territoires participent activement au sous-comité.

Les objectifs du sous-comité ont été définis comme il suit :

étayer de documents les «meilleures pratiques», sans perdre de vue l'aspect réaliste des coûts et avantages propres à chacune. Aussi, découvrir de nouvelles méthodes permettant d'adapter le mode de vie des autochtones aux débouchés offerts par l'industrie minière.

définir les moyens concrets que gouvernements, sociétés minières, groupes et particuliers autochtones peuvent adopter pour accroître sensiblement la participation des autochtones à l'exploitation minière.

examiner quels moyens, le cas échéant, pourraient être pris et quels obstacles sur le plan légal et structurel pourraient être levés, afin d'accélérer la progression vers l'objectif d'augmenter la participation des autochtones à l'industrie minière au Canada.

Durant sa première année, les membres du sous-comité ont fait la documentation sur les meilleurs exemples, ont revue l'information démographique, ont préparé une bibliographie et ont décrits les politiques gouvernementales et les différents programmes. Les résultats furent publiés en février 1991, dans le rapport de la Phase I.

En préparant le rapport de la Phase II, le sous-comité a entrepris des consultations étendues auprès de l'industrie minière et des organisations autochtones. Comme résultat, deux initatives majeures furent poursuites et incluses dans le rapport de la Phase II.

1) Une enquête étendue, par l'entremise de questionnaires, de l'industrie minière et des communautés/réserves autochtones fut entreprise dans chaque province et territoire participant.

2) Les sociétés qui ont déployé des efforts a augmenter la participation des autochtones ont reçu un certain nombre d'outils de référence pour leur aider. Ceux-ci font partie de l'appendice.

En plus, nous avons fait des efforts pour démontrer les démarches entreprises par différent groupes (provinces, sociétés minières, conseil tribaux) afin d'augmenter la participation des autochtones à l'industrie minière.

Le rapport Phase II, C'EST FAISABLE, inclus:

- un rapport sommaire
- les annexes :
  - Bibliographie sélective annotée
  - Cartes - emplacement des collectivités autochtones ou des réserves par rapport aux mines mines en exploitation
  - Liste de vérification visant à faciliter la tâche des des sociétés minières ayant des exploitations dans des secteurs situés à proximité des collectivités autochtones
  - Résumé des accords socio-économique
  - Cinq études de cas démontrant les programmes et les politiques conçu afin d'améliorer le bien-être des autochtones
  - Participation des associations minières à la sensibilisation des peuples autochtones
  - Résumé des réponses aux questionnaires sur la participation des autochtones à l'industrie minière
  - Analyse des réponses aux questionnaires sur la participation des autochtones à l'industrie minière

Même si ce sujet est trés complexe, les observations préliminaires sont comme suit.

Dans le cas des exploitations avec service de navette aérienne, les exploitants ont réussi a obtenir un niveau élevé de participation autochtone. Le facteur principal qui influence la participaction des authochtones, le travail par rotation (x semaines dans/x semaines sorti), a été developpé aux exploitations avec service de navette aérienne. Ceci permet aux employés autochtones de travailler dans un cadre économique et de continuer leur vie traditionnel (chasse, pêche, piégeage, etc.).

Les sociétés ayant des accords socio-économiques ont généralement un plus haut niveau de participation des autochtones à leur mine et les résidents locaux obtiennent une plus grande compréhension de l'opération minière.

La communication entre les sociétés minières et les communautés/réserves locales sont de trés grandes importances. Néanmoins, les communautés/réserves pensent que les exploitations peuvent probablement faire mieux dans le secteur des communications.

Plusieurs autochtones préfèreraient participer a l'industrie minière par l'entremise de leur propre entreprises.

En 1991, lors de l'assemblée des Ministres des mines, ont a demandé au sous-comité de continuer ce projet pour une troisième année. Durant cette période, le sous-comité planifie d'étendre leur étude afin d'inclure l'industrie minière, produire plusieurs dépliants baser sur les résultats à date et développer des études de cas supplémentaires.

TABLE DES MATIÈRES

Sommaire

1. Introduction..... 1

2. Rapport Sommaire..... 3

2.1 Bibliographie sélective annotée..... 7
2.2. Cartes - emplacement des collectivités autochtones et des réserves par rapport aux mines en exploitation..... 4
2.3. Liste de vérification visant à faciliter la tâche des sociétés minières ayant des exploitations dans des secteurs situés à proximité des collectivités autochtones..... 5
2.4. Résumé des accords socio-économique..... 5
2.5. Études de cas..... 6
2.6 Participation des associations minières à la sensibilisation des peuples autochtones..... 7
2.7 Résumé des résponses aux questionnaires sur la participation des autochtones à l'industrie minière..... 7
2.8 Analyse des résponses aux questionnaires sur la participation des autochtones à l'industrie minière..... 8

ANNEXE A : Bibliographie sélective annotée..... 9

ANNEXE B : Cartes - emplacement des collectivités autochtones et des réserves par rapport aux mines en exploitation..... 19
Addenda A : Sources des données utilisées pour l'établissement des cartes..... 33

ANNEXE C : Liste de vérification visant à faciliter la tâche des sociétés minières ayant des exploitations dans des secteurs situés à proximité des collectivités autochtones..... 37
Addenda A : Sources de renseignements concernant les autochtones..... 43
Addenda B : Publications relatives aux affaires autochtones et aux affaires du nord susceptibles d'afficher les offres d'emploi..... 45

ANNEXE D : Résumé des accords socio-économique..... 51
Addenda A : Éléments particuliers propres à une province ou à un territoire déterminés à partir des accordes disponibles..... 63

ANNEXE E : Études de cas..... 65

ANNEXE F : Participation des associations minières à la sensibilisation des peuples autochtones..... 91

ANNEXE G : Résumé des résponses aux questionnaires sur la participation des autochtones à l'industrie minière..... 99

Addenda A : Sondage des sociétés minières..... 121

Addenda B : Sondages des réserves et des collectivités autochtones..... 131

ANNEXE H : Analyse des résponses aux questionnaires sur la participation des autochtones à l'industrie minière..... 141

1. INTRODUCTION

En août 1989, le Groupe de travail interministériel sur l'industrie minière (GTIIM), a établi un sous-comité chargé d'étudier la nature de la participation autochtone à l'industrie minière au Canada.[1]

Les objectifs du sous-comité ont été définis comme il suit :

1. Tout en tenant compte des différences régionales et des exigences des divers projets d'exploitation minière, étayer de documents les «meilleures pratiques», sans perdre de vue l'aspect réaliste des coûts et avantages propres à chacune. Aussi, découvrir de nouvelles méthodes permettant d'adapter le mode de vie des autochtones aux débouchés offerts par l'industrie minière.

2. Définir les moyens concrets que gouvernements, sociétés minières, groupes et particuliers autochtones peuvent adopter pour accroître sensiblement la participation des autochtones à l'exploitation minière.

3. Examiner quels moyens, le cas échéant, pourraient être pris et quels obstacles sur le plan légal et structurel pourraient être levés, afin d'accélérer la progression vers l'objectif d'augmenter la participation des autochtones à l'industrie minière au Canada.

La participation des autochtones, définie dans ses grandes lignes, englobe l'emploi, la prestation de services par des sociétés autochtones ou non autochtones, la participation financière, et la contribution à la production minière et au processus d'examen de la réglementation.

Au début de ses travaux, le sous-comité a cerné diverses tâches à accomplir, du moins au cours d'une période de deux ans, pour pouvoir atteindre les objectifs établis. Les voici :

- documentation sur les meilleurs exemples de participation des autochtones à l'industrie minière canadienne,
- rédaction d'une bibliographie sélective annotée,
- documentation sur les pratiques, procédures, et politiques gouvernementales existantes de nature à favoriser la participation des autochtones à l'industrie minière,

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[1] Dans la présente étude, on entend par «autochtone» les populations autochtones suivantes : Indiens inscrits et non inscrits, Métis et Inuit. Les termes autochtones et aborigènes sont utilisés dans le rapport. L'industrie minière englobe toutes les étapes, notamment l'exploration, la construction préalable, la construction proprement dite, l'exploitation de la mine et de l'usine de traitement, la fusion et le raffinage, l'entretien et la remise en état des mines.

- documentation sur le rapport démographique entre les autochtones et l'industrie minière,
- examen de moyens de stimulation qui pourraient être utilisés afin d'accroître la participation des autochtones à l'industrie minière,
- identification des obstacles à la participation des autochtones,
- identification de moyens pour intégrer le mode de vie traditionnel des autochtones à une économie basée sur la rémunération,
- énumération des moyens que gouvernements, compagnies, groupes autochtones et individus peuvent ou pourraient prendre pour augmenter la participation des autochtones à l'exploitation minière.

Au cours de sa première année d'existence, le sous-comité présidé par la Colombie-Britannique et co-présidé par le ministère fédéral des Affaires indiennes et du Nord canadien (MAINC) a examiné le rapport entre les autochtones du Canada et l'industrie minière et amorcé les quatre premières des tâches énumérées ci-dessus.

En février 1991, à la suite de consultations avec trois organisations autochtones nationales (Assemblée des premières nations, Inuit Tapirisat du Canada et Conseil national des autochtones) ainsi que deux associations minières (l'Association minière du Canada et l'Association canadienne des prospecteurs et entrepreneurs), le sous-comité a publié son rapport portant sur la phase I.

Au cours de la deuxième année, le sous-comité était présidé par la Saskatchewan et de nouveau co-présidé par le MAINC. L'Alberta, la Colombie-Britannique, le Manitoba, le Nouveau-Brunswick, les Territoires du Nord-Ouest, l'Ontario et le Yukon étaient représentés comme membres.

Après avoir passé en revue sa première année de fonctionnement, le sous-comité a décidé de consacrer sa deuxième année à l'édification déjà amorcée de la banque de données et d'engager des consultations significatives avec l'industrie minière, d'une part, et les autochtones, d'autre part. De cette façon, il serait mieux en mesure de s'acquitter du reste des tâches déjà déterminées et également de mieux cerner les coûts et les avantages, pour tous les intéressés, de la participation des autochtones à cette industrie.

Il fut également convenu que ce qui serait le plus avantageux pour l'industrie minière serait de disposer d'un certain nombre d'outils de référence qui lui permettraient d'en apprendre davantage sur les peuples autochtones et qui faciliteraient les contacts entre les deux groupes.

2. RAPPORT SOMMAIRE

Le corps principal du présent rapport fournit un résumé de chacune des tâches entreprises par le sous-comité. On en trouvera une présentation détaillée dans les annexes.

2.1 Bibliographie sélective annotée

La bibliographie sélective annotée constitue la poursuite du travail amorcé au cours de la phase I du projet. Comme dans le cas de la bibliographie originale, diverses sources ont été utilisées, l'accent étant mis sur les bibliothèques des administrations centrales nationales des trois grandes organisations autochtones du Canada (l'Assemblée des premières nations, les Inuit Tapirisat du Canada, et le Conseil national des autochtones).

La bibliographie renferme un certain nombre de titres touchant six domaines distincts. La plupart des ouvrages recensés couvrent différents aspects de la relation entre l'industrie minière et les peuples autochtones, mais on a cherché à ouvrir les perspectives et à englober des ouvrages généraux sur les mines et les expériences faites dans d'autres industries et pays.

Quatre titres apparaissent sous la rubrique des Ouvrages généraux. Deux portent sur les répercussions socio-économiques des projets de mise en valeur des ressources dans le Nord et les deux autres sont des comptes rendus de différents colloques sur les relations de travail dans les mines et sur la participation des autochtones à l'exploitation minière.

Un seul titre figure sous la rubrique Emploi et formation. L'étude s'attarde aux effets de l'emploi par rotation dans l'industrie pétrolière du Nord sur une collectivité inuit.

Sous les rubriques Occasions d'affaires et Investissements, on trouve diverses études, rapports et articles qui se penchent sur les différents aspects des occasions d'affaires dans les industries d'exploitation des ressources qui s'offrent aux peuples autochtones du Canada et des États-Unis et qui sont exploitées par eux.

Sous la rubrique intitulée Autres titres, apparaît un ouvrage sur le travail, l'emploi et la formation dans le Nord du Canada; il s'agit d'un important document de source pour ceux qui s'intéressent à cette question.

La dernière partie de la bibliographie s'intitule Collectivités mono-industrielles; un ouvrage y est répertorié qui examine la question en Colombie-Britannique.

Le sous-comité poursuivra la mise à jour de toutes les sections de la bibliographie.

2.2 Cartes - emplacement des collectivités autochtones ou des réserves par rapport aux mines en exploitation

L'une des prémisses à l'origine de l'étude qui a été entreprise en 1989, était que presque la moitié des autochtones du Canada vivent dans des régions rurales qui pour la plupart, peuvent être considérées comme étant isolées ou éloignées. Prémisse qui avait comme corollaire que c'est dans ces régions que l'on trouve la plupart des chantiers d'exploitation minière du pays. Les cartes qui composent cette section du document décrivent la relation spatiale entre les collectivités et réserves autochtones et les mines en exploitation.

On compte au total 2 248 réserves indiennes au pays. Sur ce nombre, 1 478, soit 60 % comptent des secteurs non peuplés. Les cartes situent également les collectivités que Statistique Canada et(ou) le ministère des Affaires indiennes et du Nord canadien ont identifiées comme étant des collectivités autochtones.[2]

La première carte de cette série montre l'emplacement de toutes les réserves indiennes non peuplées. En raison du grand nombre de ces réserves en Colombie-Britannique, une carte distincte a été préparée. Les autres cartes montrent, à l'échelle provinciale ou régionale, l'emplacement à la fois des mines en exploitation et des réserves ou collectivités autochtones peuplées.

En montrant la relation spatiale entre les mines en exploitation et les populations autochtones, les cartes permettent aux sociétés minières de repérer l'emplacement des collectivités ou réserves autochtones. On a intégré les secteurs des réserves non peuplés afin de rappeler aux entreprises qu'elles doivent être prudentes au moment de pénétrer dans un secteur qui paraît par ailleurs non utilisé.

Comme on l'indique à l'addenda A de l'annexe B (p. 33), le système de données qui a servi à montrer l'aspect minier de ces cartes comprend beaucoup d'autres informations intéressantes.

Comme il s'agit d'un tout nouveau système, le sous-comité est conscient qu'il peut manquer certaines collectivités. Toutefois, le travail se poursuit afin d'améliorer la banque de données des cartes.

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[2] Les définitions utilisées pour dresser ces cartes se trouvent à l'addenda A de l'annexe B (p. 33).

2.3 Liste de vérification visant à faciliter la tâche des sociétés minières ayant des exploitations dans des secteurs situés à proximité des collectivités autochtones

Bien des entreprises minières sont intéressées à entretenir de bons contacts avec les peuples autochtones dans les secteurs où elles sont en exploitation. Toutefois, bon nombre d'entre elles n'en savent pas assez sur la collectivité autochtone pour savoir de quelle façon entrer en contact. Par ailleurs, les compagnies sont dans l'incertitude quant à ce qu'elles doivent savoir ou ce qu'elles doivent dire aux gens. Voilà pourquoi, une liste de contrôle a été élaborée pour englober le plus grand nombre possible de questions de ce genre.

On estime que si une entreprise suit les instructions fournies dans la liste de contrôle, répond au plus grand nombre possible de questions, les exploite et entretient des communications efficaces à mesure que le projet va de l'avant, les contacts entre l'entreprise et la collectivité locale seront positifs.

Deux listes distinctes sont intégrées à la liste de contrôle. La première énumère les organisations gouvernementales et autochtones (numéros de téléphone inclus) que les entreprises à la recherche d'information peuvent contacter (p. 43); la deuxième énumère les journaux autochtones et autres qu'une entreprise peut choisir d'utiliser pour faire part de son projet aux autochtones visés (p. 45). La deuxième liste peut également servir aux compagnies pour annoncer les débouchés d'emploi directement dans les collectivités autochtones.

2.4 Résumé des accords socio-économique

L'un des moyens les plus fréquemment utilisés par les gouvernements, les sociétés minières et les collectivités autochtones pour s'assurer que les projets d'exploitation minérale donneront le maximum d'avantages à la population locale, est l'entente socio-économique.

Les raisons qui amènent une société à conclure une entente de ce genre peuvent varier. Certaines le font sur une base strictement volontaire (c'est parce que l'entreprise est convaincue qu'il s'agit de la meilleure façon de procéder) tandis que d'autres concluent un accord parce que le gouvernement en fait une exigence.

En ce qui a trait aux autres aspects des rapports entre l'industrie des mines et les autochtones, bien des compagnies ne savent pas exactement comment élaborer une entente ou ce qui devrait y figurer. Il est arrivé que des sociétés s'adressent à un bureau du gouvernement pour se faire guider dans l'élaboration d'une entente à caractère socio-économique. Dans de tels cas, le bureau du gouvernement a, dans l'ensemble, renvoyé la partie

intéressée à des ententes antérieures et a suggéré à l'entreprise d'étudier les diverses clauses qu'on y trouve.

Afin d'aider ceux qui pourraient être appelés à participer à l'élaboration d'ententes de type socio-économique dans l'avenir, un recueil des ententes existantes a été établi. Le résumé que l'on trouve à l'annexe D (p. 51) ne se veut rien d'autre qu'un guide. Bon nombre des articles qui se trouvent dans le résumé se retrouvent dans la plupart des ententes qui ont été étudiées; par contre, il peut arriver que des articles ne se retrouvent que dans une ou deux ententes. Il est très peu probable qu'une seule entente à caractère socio-économique renferme tous les articles contenus dans le présent résumé, étant donné que chaque entente est adaptée à une situation particulière.

En ce qui a trait à la nécessité de recourir à des ententes à caractère socio-économique et à l'utilisation qui en est faite, les exigences varient en fonction des provinces ou territoires. Afin d'aider ceux qui cherchent plus de renseignements sur les exigences, celles-ci ont été résumées à l'addenda A (p. 63). Pour des renseignements plus précis, on peut s'adresser aux divers ministères des mines.

2.5 Études de cas

Le rapport de la phase I présentait un certain nombre d'études de cas de sociétés minières qui, au fil des ans, avaient acquis la réputation d'entretenir des rapports particulièrement fructueux avec les autochtones. Les cinq études de cas contenues dans le présent rapport donnent un certain nombre d'exemples différents de programmes ou de politiques destinés à améliorer le bien-être des peuples autochtones.

La première étude de cas relate l'initiative prise récemment par le conseil tribal de Tahltan dans le nord-ouest de la Colombie-Britannique pour mettre sur pied son propre centre de formation minière (p. 67). Cette initiative répond au désir des Tahltans de profiter au maximum des activités d'exploitation minière dans leur milieu traditionnel de vie et de participer à leur mise en place. La mise sur pied du centre de formation est leur réponse aux possibilités que la mine leur offre.

Une autre étude de cas recense les programmes innovateurs de formation minière qui ont été mis sur pied au cours des quelques dernières années en Saskatchewan (p. 73). Certains des programmes ont été conçus par les gouvernements, mais d'autres sont dus à l'initiative des sociétés. On reconnaît que tous les programmes de formation ne conviennent pas dans tous les cas.

L'une des études de cas esquisse le programme de formation qui a été mis sur pied au Manitoba dans le cadre du gigantesque projet hydro-électrique de Limestone sur la rivière Nelson (p. 79). À

noter que par suite du programme de formation, la population active du Nord (composée en grande partie d'autochtones) qui n'avait pour ainsi dire aucune personne qualifiée en 1984, compte maintenant plus d'un millier de personnes inscrites à un cours de métier en 1990. Une deuxième étude de cas en provenance du Manitoba fournit de l'information sur l'Entente concernant la mise en valeur du Nord conclue entre le Canada et le Manitoba (1982-1989), accord destiné à promouvoir le bien-être économique des gens (en particulier les autochtones) qui habitent dans la partie nord de la province (p. 83).

La dernière étude de cas fait le point sur les initiatives prises récemment dans le nord de l'Ontario pour aider les autochtones à atteindre à l'autodétermination (p. 85). On y met en lumière l'effet des initiatives récentes sur l'industrie des minéraux de la province (et tout particulièrement de l'Entente sur les mesures provisoires de 1990 conclue entre les gouvernements de l'Ontario et du Canada et la nation nishnawbe-aski).

2.6 Participation des associations minières à la sensibilisation des peuples autochtones

On a demandé aux nombreuses organisations vouées à la promotion de l'industrie minière au Canada de fournir de l'information sur toute initiative en cours afin de mieux informer les autochtones sur l'activité minière et les rendre plus en mesure d'y participer. Cette liste n'est peut-être pas exhaustive mais elle donne au moins des exemples concrets de ce qui peut être fait. L'idée est également de donner les coordonnées de personnes-ressources pour ceux qui seraient intéressés à en savoir davantage.

2.7 Résumé des réponses aux questionnaires sur la participation des autochtones à l'industrie minière

Partout au pays, dans les provinces et territoires participants, des questionnaires ont été envoyés à des sociétés minières choisies de même qu'à des collectivités et réserves autochtones. Le but du sondage était de faire la part des choses entre la réalité et les perceptions pour ce qui est des coûts, des avantages, des obstacles et des possibilités liés à tous les aspects de la participations des autochtones aux activités minières. L'annexe G (p. 99) résume les résultats du dépouillement des questionnaires reçus (28 de la part de sociétés minières, et 20 de la part de collectivités et réserves autochtones).

Le résumé fournit l'essentiel des données et des observations fournies par les répondants.

2.8 Analyse des réponses aux questionnaires sur la participation des autochtones à l'industrie minière

C'est faisable! Tel est le message principal qui ressort des questionnaires remplis. Les autochtones sont capables de participer à la vie économique des mines et des autres opérations minières, et nombreuses peuvent être les occasions d'emploi et d'affaire qui s'offrent aux collectivités et aux réserves autochtones dans ce secteur.

Toutefois, les résultats du sondage ne nous disent pas que toutes les mines situées à proximité de concentrations à forte population autochtone ont automatiquement un haut niveau d'emploi autochtone. Il ressort des résultats qu'en raison d'un ensemble de facteurs socio-économiques, le taux d'activité des autochtones est susceptible d'être plus élevé dans les exploitations minieres en milieu isolé que dans les exploitations en milieu habité.

En particulier, le travail par rotation des exploitations en milieu isolé convient davantage au mode de vie traditionnel des autochtones. L'emplacement des collectivités autochtones - qui pour la plupart se trouvent plus près des exploitations en milieu isolé que près des points de ramassage du Sud, réduit en outre les coûts du transport pour l'exploitant. Les résultats montrent également que toutes les exploitations peuvent probablement faire mieux, tout spécialement dans le secteur des communications.

Annexe A

Bibliographie

sélective

annotée

ANNEXE A

BIBLIOGRAPHIE SÉLECTIVE ANNOTÉE

1. OUVRAGES GÉNÉRAUX

Association des Inuit de la région de Baffin. Executive Summary Socio-Economic Impacts of the Nanisivik Mine on North Baffin Region Communities. Ottawa: ministère des Affaires indiennes et du Nord canadien, 1980.

Sommaire des résultats d'une étude qui a évalué la mine de Nanisivik quant à l'efficacité de son programme d'emploi des autochtones et aux répercussions des emplois reliés à l'exploitation minière sur les travailleurs inuit, leurs familles et leurs collectivités. L'étude a été réalisée par Charles Hobart. Le résumé se divise en plusieurs parties brèves: le but de l'étude; l'exploitation de la mine de Nanisivik, les sources des données analysées; les entrevues avec les Inuit; les limites de l'étude; le profil de la main-d'oeuvre inuit; la fiche d'emploi des travailleurs inuit; le revenu salarial provenant d'emplois reliés à l'exploitation minière; les effets perçus par les Inuit sur leurs collectivités; les réactions des travailleurs, des épouses et des enfants à l'expérience de travail; les répercussions sur les sources de revenu plus traditionnelles; et les conclusions et recommandations de l'étude.

Canada. Ministère des Affaires indiennes et du Nord canadien. La participation des autochtones à l'exploitation minière. Comptes-rendus du séminaire sur la participation des autochtones à l'exploitation minière, Yellowknife, les 18 et 19 mars 1987. Yellowknife: 1987.

Le séminaire avait pour but de fournir une tribune afin de permettre aux représentants des organismes autochtones, de l'industrie minière et des gouvernements fédéral et territorial de discuter des principales caractéristiques de l'exploration et de l'exploitation minérales dans l'ouest des T.N.-O. Ce séminaire devait également sensibiliser davantage l'industrie minière aux intérêts des sociétés autochtones dans l'exploitation minière et donner aux organismes autochtones une meilleure évaluation de la façon de poursuivre leurs intérêts.

L'ouvrage comprend la transcription intégrale des documents présentés au cours du séminaire, et des discussions qui ont suivi. Les documents traitaient des sujets suivants: l'exploitation minière au Canada et dans les T.N.-O.; l'exploration et l'exploitation; le côté économique de

l'exploitation; les débouchés (d'entreprises et d'emplois); le soutien du gouvernement; la participation des autochtones; et les conclusions. Les annexes fournissent le programme détaillé du séminaire ainsi que la liste des participants.

Dome Petroleum Limited, Esso Resources Canada Limited et Gulf Canada Resources Inc. Environmental Impact Statement for Hydrocarbon Development in the Beaufort Sea-Mackenzie Delta Region, volume 5: Socio-Economic Effects. 1982.

Ce rapport est un document conjoint des trois principales compagnies d'exploration pétrolière et gazifère dans la région de la mer de Beaufort (la Dome, l'Esso et la Gulf). Au nombre des sujets traités, mentionnons: des renseignements généraux sur la région de Beaufort; les types de collectivités dans la région (traditionnelle, en transition et frontalière moderne); l'économie traditionnelle de la région; les scénarios possibles pour la région, avec et sans l'exploitation des hydrocarbures; les répercussions de l'exploitation des hydrocarbures (augmentation des ressources humaines et des immobilisations, croissance des affaires, moyens de transport nécessaires, problèmes communautaires, conflits avec l'exploitation des ressources renouvelables par les autochtones, et responsabilités du gouvernement); les politiques d'exploitation (politiques actuelles, développement communautaire et mise en valeur des ressources à long terme, planification de l'utilisation des terres); les régions de ravitaillement dans le Nord (Yukon, collectivités du Grand lac des Esclaves, Arctique centrale, Arctique de l'est, et Keewatin); les collectivités du corridor intérieur; les collectivités du chenal Parry; les collectivités de la baie Baffin -- détroit de Davis; et l'Alaska. L'un des principaux thèmes du rapport est l'exploitation des ressources pétrolières et gazifères de la mer de Beaufort "sans modifier de façon significative le style de vie des nordiques ou l'environnement dont dépendent ces peuples". L'ouvrage comprend des références et des annexes.

Wojciechowski, M.J., éd. Employee Relations Initiatives in Canadian mining. Procès-verbaux du quatrième séminaire sur la politique du CRS. Kingston: Centre for Resource Studies, 1979.

Le séminaire a porté principalement sur les points suivants: les facteurs importants dans le recrutement des employés et le maintien de l'effectif; les types de collectivités et les styles de vie que préfèrent les employés; quels sont les types d'employés requis; et qu'est-ce qui motive le plus les employés et comment leur faire sentir qu'ils sont des

dépositaires d'enjeu dans la société et dans l'industrie minière.

Les procès-verbaux comprennent les documents présentés ainsi qu'un résumé des discussions des participants sur les initiatives instaurées visant à tenir compte des préoccupations et sur les nouvelles initiatives qui amélioreraient les relations des employés dans l'industrie minière canadienne. Les annexes fournissent la liste des participants, le programme du séminaire et les profils des auteurs.

2. EMPLOI ET FORMATION

Hobart, Walsh And Associate Consultants Ltd. Rotation Employment of Coppermine Inuit Men: Community Perspectives and Effects. Pour Esso Resources Canada Limited, Aquitaine Co. of Canada Ltd. et Canada Cities Services Ltd. Edmonton: mai 1978.

Ce rapport présente les résultats d'une étude portant sur les répercussions de l'emploi à la Gulf Oil Canada sur Coppermine, un village d'environ 800 habitants dont la majorité sont des Inuit, situé sur la côte arctique, à 600 kilomètres au nord de Yellowknife. Au cours des hivers 1972-1973 à 1976-1977, la Gulf a employé entre 54 et 90 hommes de Coppermine pour les travaux d'exploitation pétrolière dans le delta du Mackenzie. L'étude met l'accent sur l'évaluation des conséquences générales et à long terme de ces années à fort taux d'emploi sur la collectivité et sur les résidents.

Les titres des chapitres du rapport sont les suivants: sommaire; but et méthodologie; renseignements généraux: le cadre géographique et historique et les origines des emplois de la Gulf; le programme d'emploi du point de vue de la collectivité; répercussions de l'emploi sur les sources de revenu traditionnelles à Coppermine; coûts sociaux de la rotation d'emploi; les réactions des travailleurs de la Gulf et de leurs épouses; leçons tirées par les adultes de l'expérience de travail; et leçons tirées par les jeunes de l'expérience de travail. L'ouvrage comprend des références.

3. OCCASIONS D'AFFAIRES

Bankes, Nigel. Resource-leasing Options and the Settlement of Aboriginal Claims. Comité canadïen des ressources arctiques, 1983.

Cette étude explore la question des règlements des revendications territoriales, en particulier dans le Nord du

Canada, pour ce qui concerne la mise en valeur des ressources. Les quatre principaux buts de l'étude sont: examiner quelques-uns des aspects du titre de propriété des terres et des ressources qui peuvent être négociables dans le cadre du règlement des revendications territoriales; indiquer quelques-uns des nouveaux accords conclus avec les groupes autochtones et les compagnies d'exploitation des ressources ailleurs dans le monde; présenter un aperçu des possibilités de location des ressources qui pourraient être offertes aux groupes autochtones, s'ils décidaient de permettre la mise en valeur des terres qui leur ont été transférées par suite du règlement des revendications autochtones; et indiquer les questions qui pourront toujours être négociables sur la base du droit propriétal, même si le groupe autochtone n'a pas droit d'opposer son veto à l'exploitation des ressources ou autres projets de développement.

L'étude se divise en cinq parties. La partie I, "Droits des autochtones", explique la nature des droits législatifs et propriétaux et décrit les revendications territoriales dans le Nord du Canada ainsi que la réponse du gouvernement fédéral à ces revendications, en 1983.

La partie II, "Accords sur les ressources dans le Tiers-Monde", couvre trois types d'accords sur les ressources conclus entre des multinationales et les pays en voie de développement (concessions, entreprises en participation, et contrats de service et de partage de la production) et l'application possible de chaque type à la situation au Canada.

La partie III, "Politiques de location des minéraux sur les terres des autochtones", se compose de trois chapitres: "les États-Unis -- en bas du 48 : parallèles pour le Nord canadien" (incluant des exemples de baux négociés tels que le bail relatif à l'uranium des Navajos-Exxon), "la mise en valeur des ressources non-renouvelables sur les terres indiennes canadiennes des provinces" et "les retombées économiques de l'exploitation des ressources sans droit propriétal pour les autochtones" (incluant des exemples d'accords d'emploi et de participation).

La partie IV, "Trois villages modernes: territoire nordique (Australie), Alaska (É.-U.) et Baie James (Québec)", présente trois études de cas: l'exploitation de l'uranium de l'Australie et la loi de 1976 sur les droits fonciers des autochtones (territoire du Nord); la loi de règlement des revendications autochtones de l'Alaska de 1971 et North Slope Borough; et la Convention de la Baie James et du Nord québécois de 1975.

La partie V renferme la conclusion de l'auteur, un glossaire, les lois et règlements adoptés en vertu de la Convention de la Baie James et du Nord québécois et une bibliographie.

Conseil consultatif d'Emploi et Immigration Canada. Innovative approaches to enterprise development: a lever for employment growth. Rapport provisoire présenté au ministre de l'Emploi et de l'Immigration, mai 1988.

Ce rapport, qui fait partie d'une étude plus vaste sur le plein emploi, met l'accent sur le rôle de l'entreprise dans la création d'emplois et discute de certaines méthodes originales visant à stimuler l'activité des entreprises. Les projets de développement économique créés localement sont recommandés comme une solution viable à la diminution continuelle des emplois dans les grosses et moyennes entreprises et le gouvernement fédéral est encouragé à aider les collectivités et les particuliers dans leurs efforts.

Parmi les sujets abordés mentionnons: les répercussions de la restructuration économique sur l'emploi (par ex., la croissance dans des secteurs particuliers et les tendances des occupations de 1978 à 1986); les perspectives d'une croissance future des emplois; les obstacles à la création d'entreprises (aptitudes en gestion insuffisantes, rareté des fonds, savoir-faire en commercialisation, technologie en pleine évolution, fardeau fiscal total, réglementation gouvernementale, pénurie de main-d'oeuvre compétente, et recrutement des employés et maintien de l'effectif); approches nouvelles à la création d'entreprises; et conclusions et recommandations.

Les annexes I - III donnent des exemples de programmes et d'initiatives d'un peu partout au Canada qui appuient la création d'entreprises ainsi qu'un certain nombre de programmes destinés à des groupes-cibles particuliers; une liste des organismes et particuliers consultés; et une liste des conférences et tribunes auxquelles on a assisté. L'annexe IV se compose d'une bibliographie, et l'annexe V d'une liste d'articles de périodiques.

Inuit Tapirisat du Canada. Working Group on Inuit Participation in the Canadian Aboriginal Economic Development Strategy: Final Report. Mars 1990.

Ce rapport a été rédigé par un groupe de travail formé de représentants de chacune des six régions inuit, d'Inuit Tapirisat du Canada (ITC), de l'Association des femmes inuit de Pauktuutit, d'Atii Training Inc., d'Arctic Co-operatives Ltd., et du ministère des Affaires indiennes et du Nord canadien, d'Emploi et Immigration Canada et du ministère de

l'Industrie, des Sciences et de la Technologie. Il présente un plan d'élaboration et de mise en oeuvre de trois grands types de services économiques dans les collectivités inuit: les services de création d'entreprises pour les organismes et particuliers inuit, les services de perfectionnement des ressources humaines qui apporteront leur aide au niveau de la formation et les services financiers, personnels et commerciaux.

Le but des services de développement économique des collectivités inuit (SDECI) est d'aider les collectivités inuit à mobiliser les ressources humaines et à progresser vers l'indépendance financière et l'autonomie. Les services nécessaires seront fournis par les organisations locales de développement économique (OLDE) qui tiennent compte des besoins particuliers de chaque région et ont la souplesse voulue afin de compenser les diverses lacunes actuelles de l'infrastructure organisationnelle. Par ailleurs, l'ITC établira une filiale nationale afin d'appuyer et de coordonner les OLDE, en mettant l'accent sur les questions communes à toutes les régions et sur le partage efficace des ressources. On met l'accent sur la consultation communautaire dans le cadre du processus visant à améliorer la stratégie, afin de maintenir la circulation des informations concernant les niveaux actuels de développement des collectivités, les ressources disponibles et les besoins des femmes dans le développement économique.

Le rapport décrit l'infrastructure organisationnelle actuelle des Inuit aux niveaux national et régional et il fournit un plan visant à intégrer le Programme de développement économique des collectivités inuit aux services gouvernementaux actuels et les budgets opérationnels détaillés pour la première année. Les annexes incluent l'ébauche du plan d'action du groupe de travail (janvier 1990) et un calendrier de mise en oeuvre pour la première année des SDECI.

4. INVESTISSEMENT

Cohen, Daniel. "Tribal Enterprise". Atlantic, vol. 264, n° 4, octobre 1989.

Cet article décrit plusieurs projets d'entrepreneurs couronnés de succès (par ex. usines, entreprises conjointes, investissements dans les réserves et hors des réserves, petites entreprises) instaurés par des conseils de tribus indiennes américaines ainsi que quelques-uns des obstacles actuels à ces projets. L'auteur commence par parler de la vente très payante d'une cimenterie par les Indiens Passamaquoddy du Maine en 1988, puis il passe brièvement en

revue le rôle du Bureau of Indian Affairs dans le développement économique des réserves américaines et décrit la situation actuelle sous le régime de l'administration Bush. Les projets de sociétés à grande échelle ainsi que les projets de petites entreprises (comme celui qui est appuyé par The Seventh Generation Fund, fondation de la Californie) sont décrits comme des approches possibles à des développements futurs dans les réserves. Deux obstacles à l'entrepreneurship indien sont soulignés: la dissension au sein des tribus et les politiques fédérales incertaines.

5. AUTRES BIBLIOGRAPHIES

de la Barre, Kenneth et al. A Bibliography on Labour, Employment and Training in the Canadian North: Some Important Issues. Préparé sous les auspices du Committee On Northern Population Research. ASTIS Occasional Publication No.8, mai 1983.

Cette bibliographie porte principalement sur les documents reliés à la population traitant surtout de la main-d'oeuvre, de l'emploi et de la formation dans le Nord canadien, avec quelques références à l'Alaska et à d'autres régions. L'ouvrage traite d'une vaste gamme de disciplines scientifiques et reflète les nombreux documents qui existent sur les répercussions économiques des projets d'extraction des minéraux et des ressources énergétiques d'envergure, en particulier en ce qui a trait à la formation et à l'emploi des nordiques. La période couverte s'étend de 1970 et même avant jusqu'en 1983. Les documents étudiés comprennent des documents publiés en anglais, en français et en inuktitut.

6. COLLECTIVITÉS MONO-INDUSTRIELLES

Porteous, J. Douglas. "Single Enterprise Communities" British Columbia: Its Resources and People. Western Geographical Series Volume 22, Charles N. Forward, éd. Département de géographie, université de Victoria, 1987.

Ce document décrit les caractéristiques sociales et géographiques des collectivités mono-industrielles de la Colombie-Britannique et fournit un modèle théorique pour une planification régionale efficace des futures collectivités dans les régions isolées. L'histoire brève du développement des villes d'entreprises est suivie d'une discussion sur la situation géographique, la structure démographique suivant l'âge et le sexe, les installations et les diverses lacunes des villes d'entreprises selon les résidents de ces collectivités. L'auteur parle également des villes champignon. Le modèle de planification régionale de

Porteous consiste en des villes centrales entourées d'un certain nombre de zones, avec des zones aux extrémités qui se recouvrent partiellement. Chaque zone est mesurée par le temps de transport nécessaire pour atteindre la ville centrale, et divers types de collectivités sont recommandés pour chaque zone. La souplesse de la planification, compte tenu des considérations géographiques et sociales, est soulignée comme un facteur clé dans le succès de telles collectivités. L'ouvrage comprend une bibliographie.

ANNEXE B

CARTES

EMPLACEMENT DES COLLECTIVITÉS AUTOCHTONES ET DES RÉSERVES PAR RAPPORT AUX MINES EN EXPLOITATION

ANNEXE B

CARTES
EMPLACEMENT DES COLLECTIVITÉS AUTOCHTONES ET DES RÉSERVES PAR RAPPORT AUX MINES EN EXPLOITATION

1. INTRODUCTION

Les cartes de la présente section montrent l'emplacement des mines en exploitation au Canada par rapport à celui des centres peuplés d'autochtones, notamment les réserves indiennes et autres établissements identifiés, d'après la population, comme étant des collectivités autochtones.[3]

Les cartes de la présente section visent les trois objectifs suivants :

i. montrer aux sociétés minières qui ne sont pas familières avec une région l'emplacement approximatif des réserves qui s'y trouvent;
ii. informer les sociétés minières de la possibilité qu'il se trouve une ou des réserves indiennes non peuplées dans une région à laquelle elles sont intéressées, et
iii. établir, selon la taille de la population, les sources de main-d'oeuvre potentielles.

On peut obtenir plus de renseignements sur les collectivités ou les réserves identifiées sur les cartes qui suivent en communiquant avec les organismes énumérés à l'addenda A de l'annexe C (p. 43) du présent rapport.

2. MINES EN EXPLOITATION

Les sept cartes montrant les collectivités autochtones et les réserves indiennes peuplées présentent aussi l'emplacement de 175 mines en exploitation. Les mines de toutes les régions du Canada comprennent celles qui produisent des métaux précieux, des métaux communs, de l'uranium, de la potasse et du charbon.

3. COLLECTIVITÉS AUTOCHTONES ET RÉSERVES INDIENNES

Le Canada compte 2 248 réserves indiennes dont environ 66 % ne sont pas peuplées et sont situées un peu partout au pays et surtout (en particulier les non peuplées) en Colombie-Britannique. Beaucoup sont situées dans des régions

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[3] La définition de «collectivité autochtone» aux fins du présent rapport se trouve à l'addenda A (p. 33) de la présente section.

éloignées. En outre, Statistique Canada et Affaires indiennes et du Nord Canada ont identifié un grand nombre d'autres collectivités (dont plusieurs sont situées dans le Nord) comme étant des collectivités autochtones.

Les réserves indiennes non peuplées sont représentées sur deux cartes; l'une montrant l'ensemble du Canada et l'autre précisant l'emplacement des nombreuses réserves non peuplées de la Colombie-Britannique.

Les réserves indiennes et les collectivités autochtones peuplées sont représentées sur sept cartes couvrant différentes provinces et régions du pays.

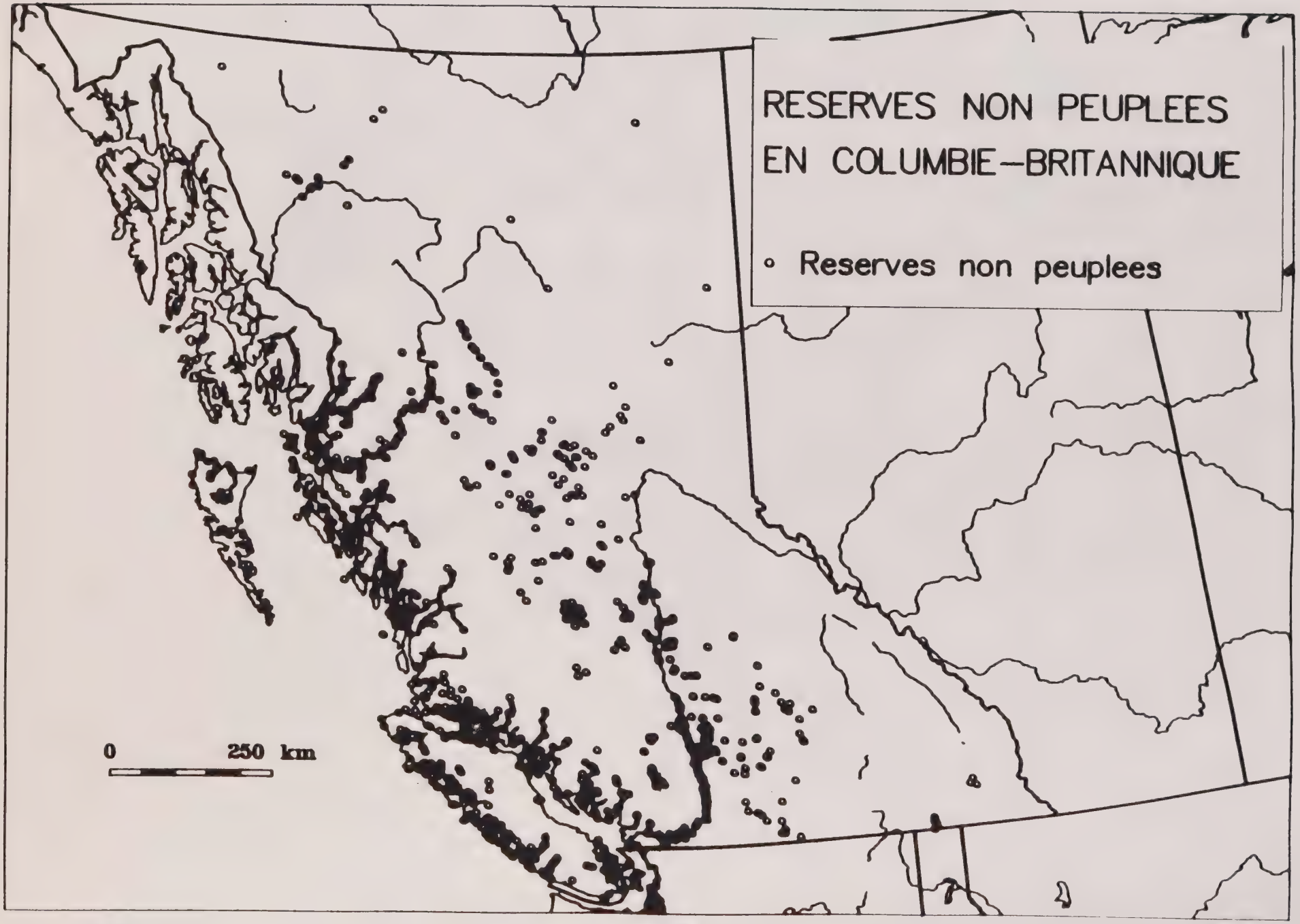
4. DONNÉES UTILISÉES

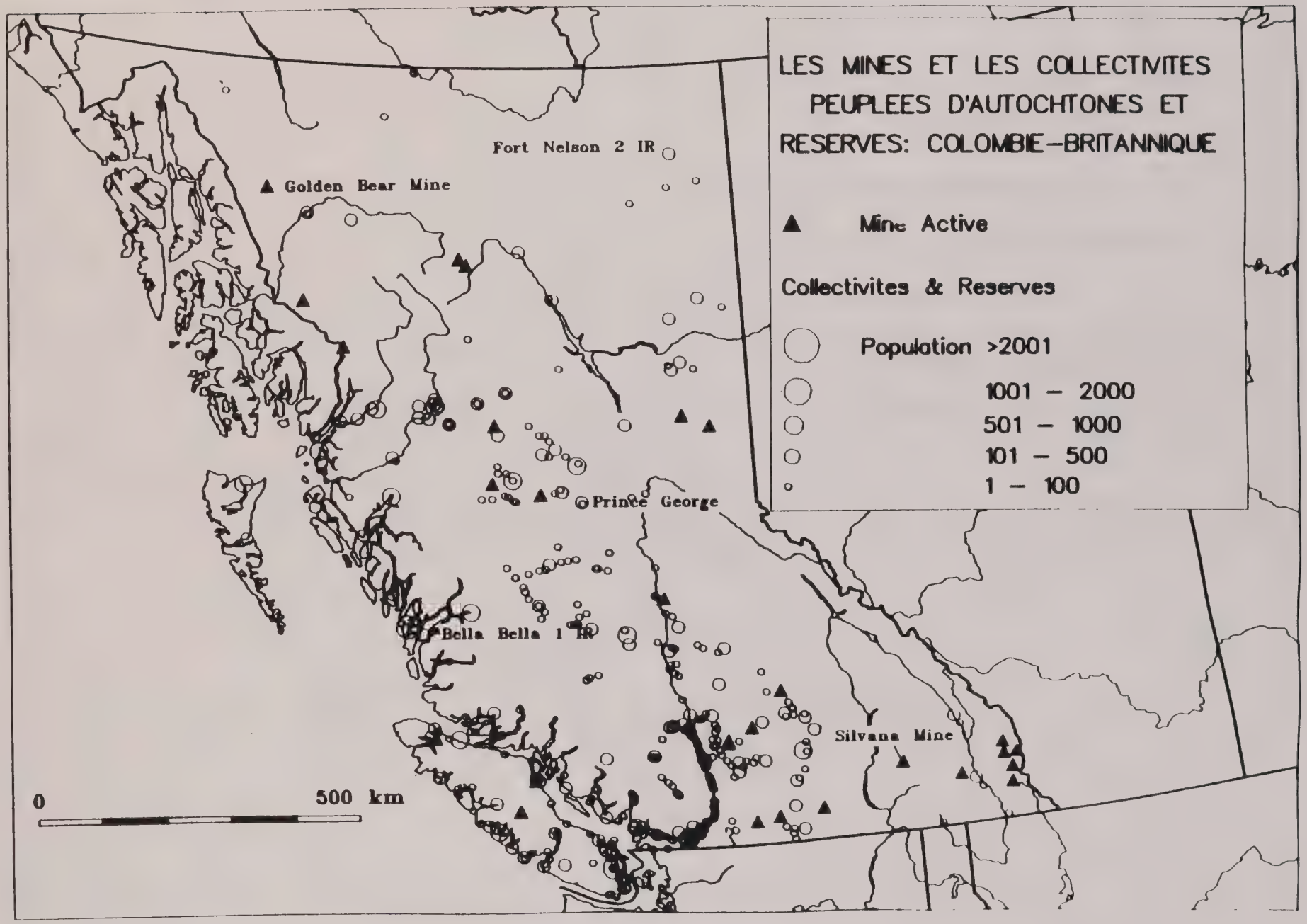
Le système de données duquel les aspects miniers de ces cartes ont été tirés comprennent beaucoup d'autres renseignements auxquels on peut avoir accès. Dans l'ensemble, il s'agit d'un nouveau système de données et le Sous-comité est conscient que certaines collectivités puissent avoir été omises. Cependant, les travaux d'amélioration de la banque de données nécessaires à l'établissement des cartes se poursuivront.

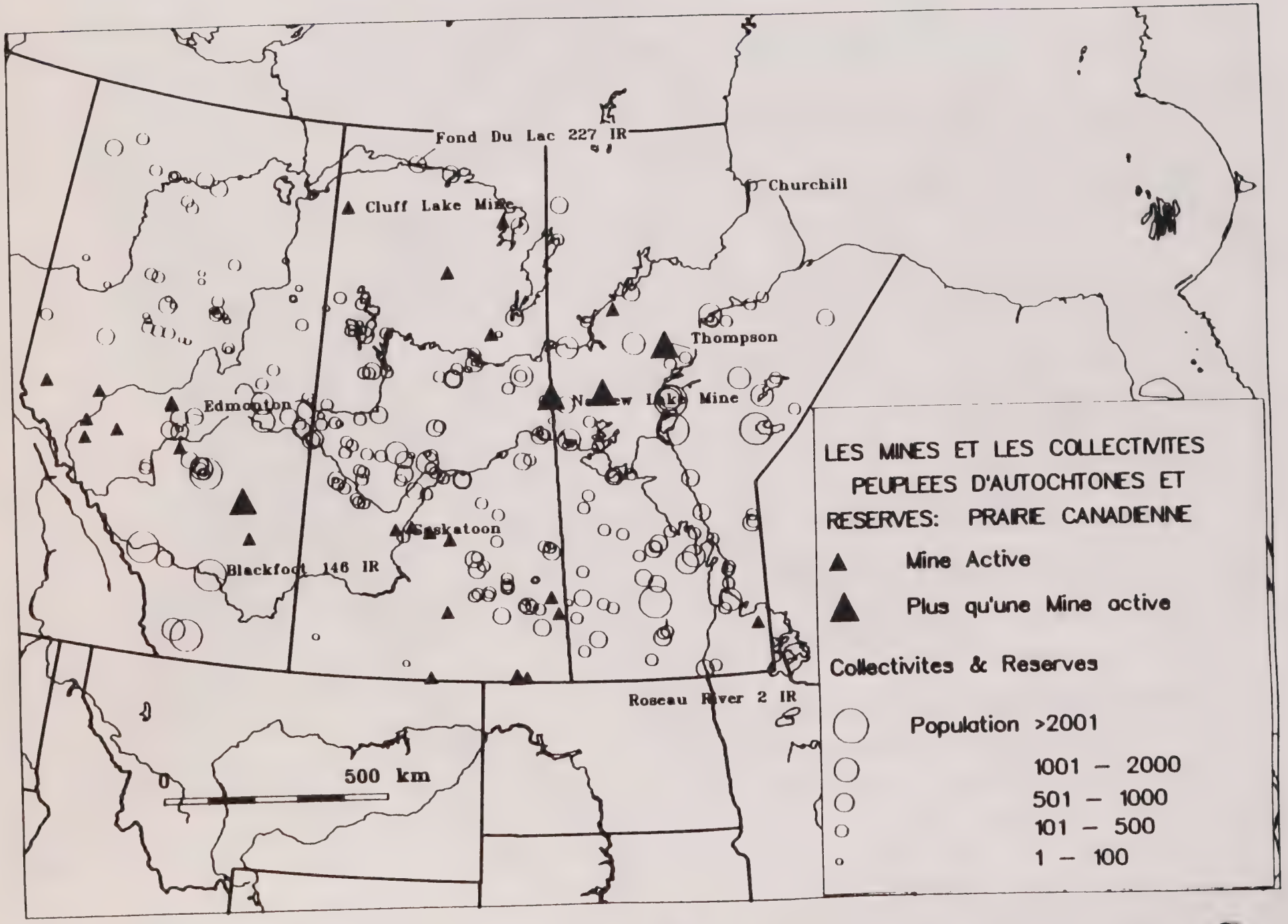
5. SYSTÈMES DE GESTION DES CARTES ET DES BASES DE DONNÉES

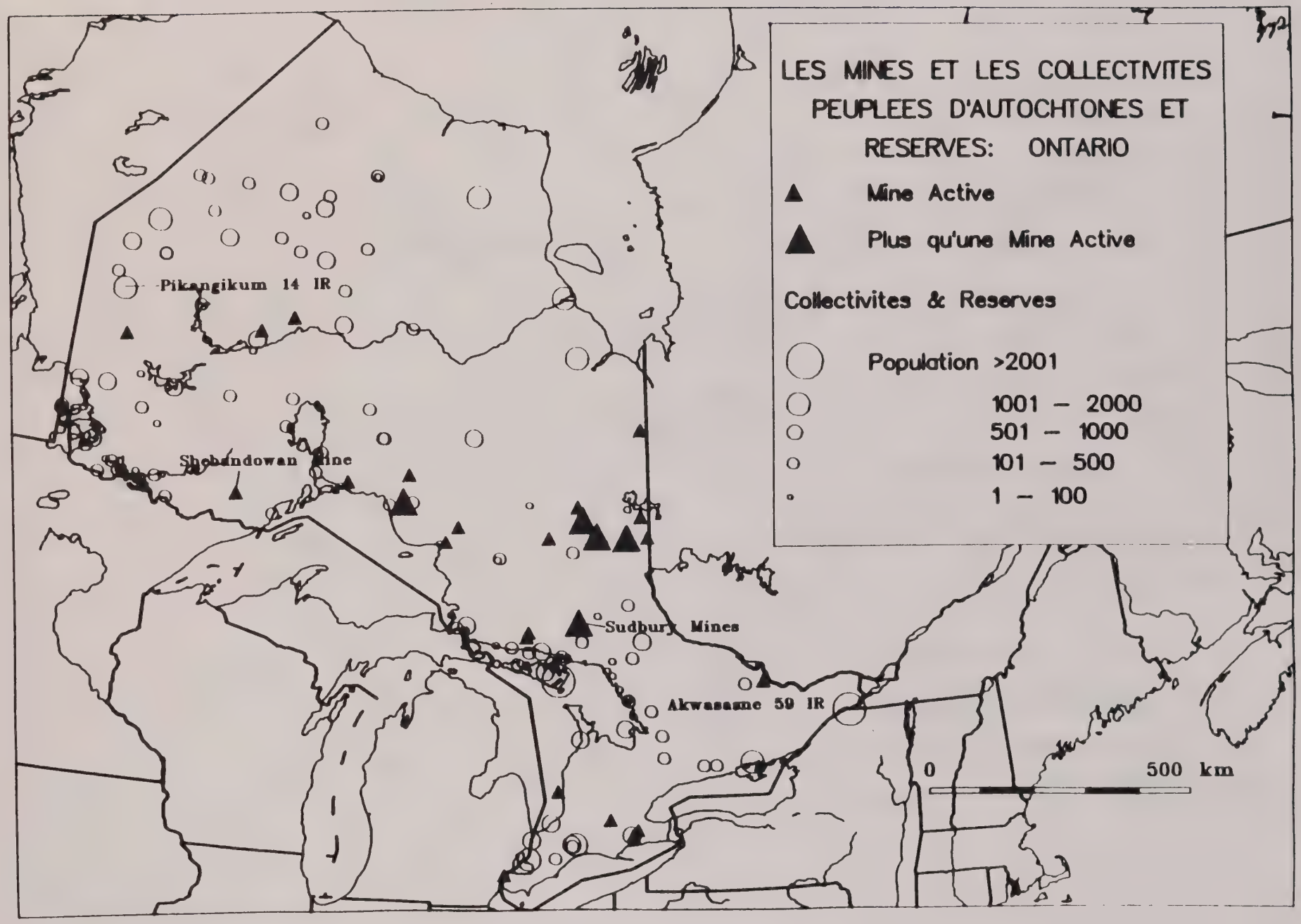
Les cartes dans cette section ont été dressées au moyen du système QUIKMap combiné au système de gestion de la base de données inFOcus.

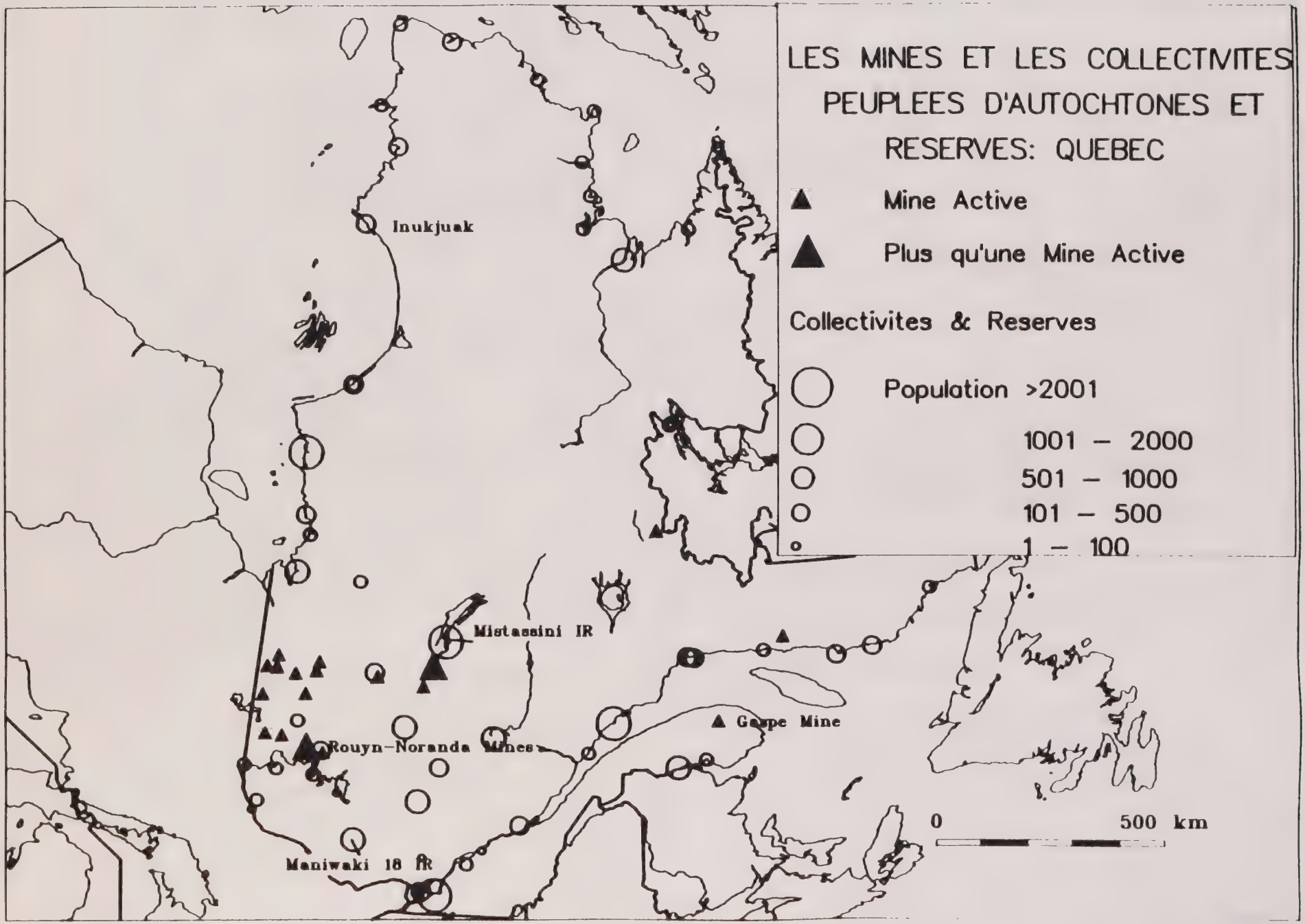

RESERVES NON PEUPLEES
AU CANADA
o Reserves non peuplees
0
1000 km

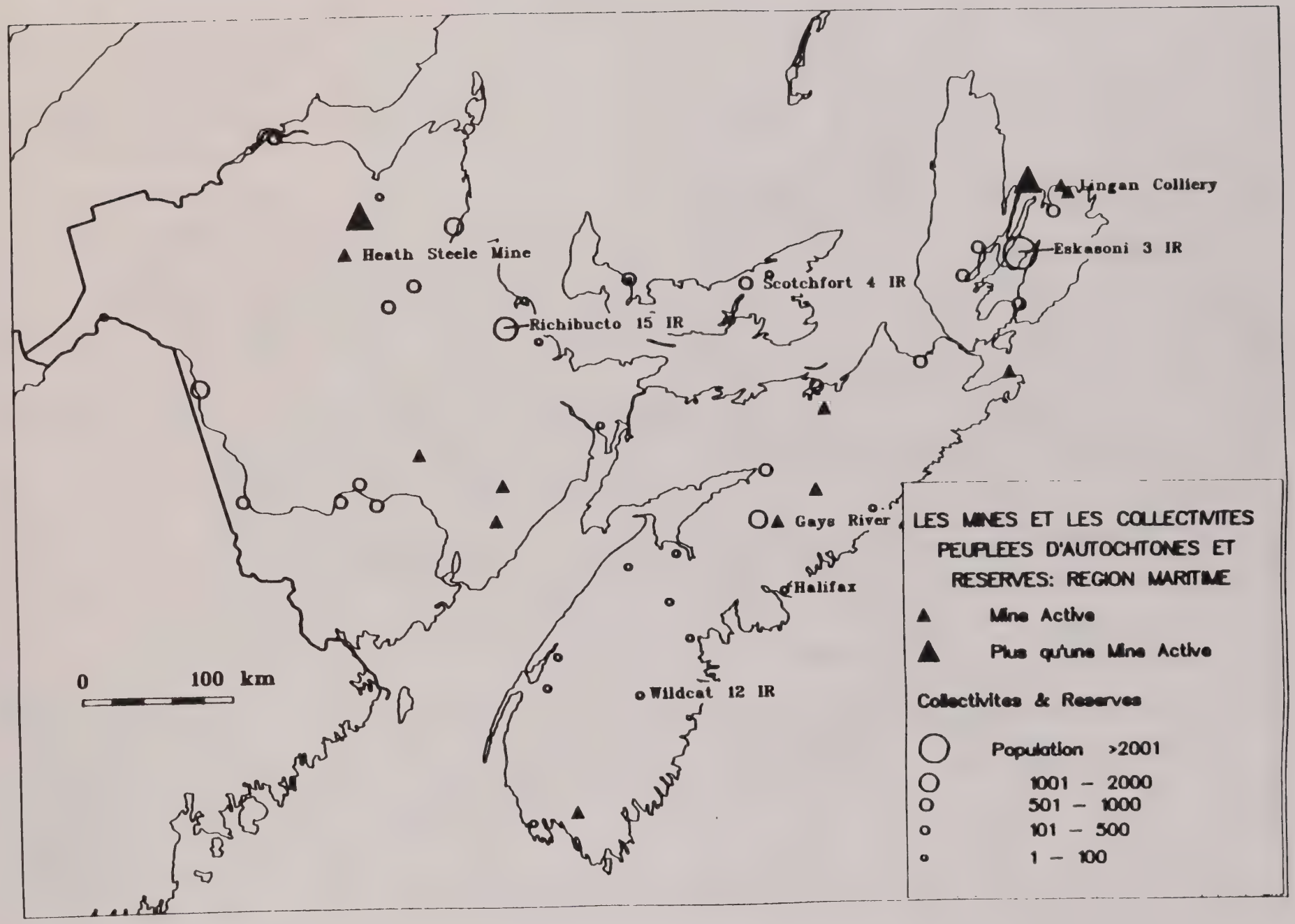

RESERVES NON PEUPLEES
EN COLUMBIE-BRITANNIQUE
Reserves non peuplees
0
250 km

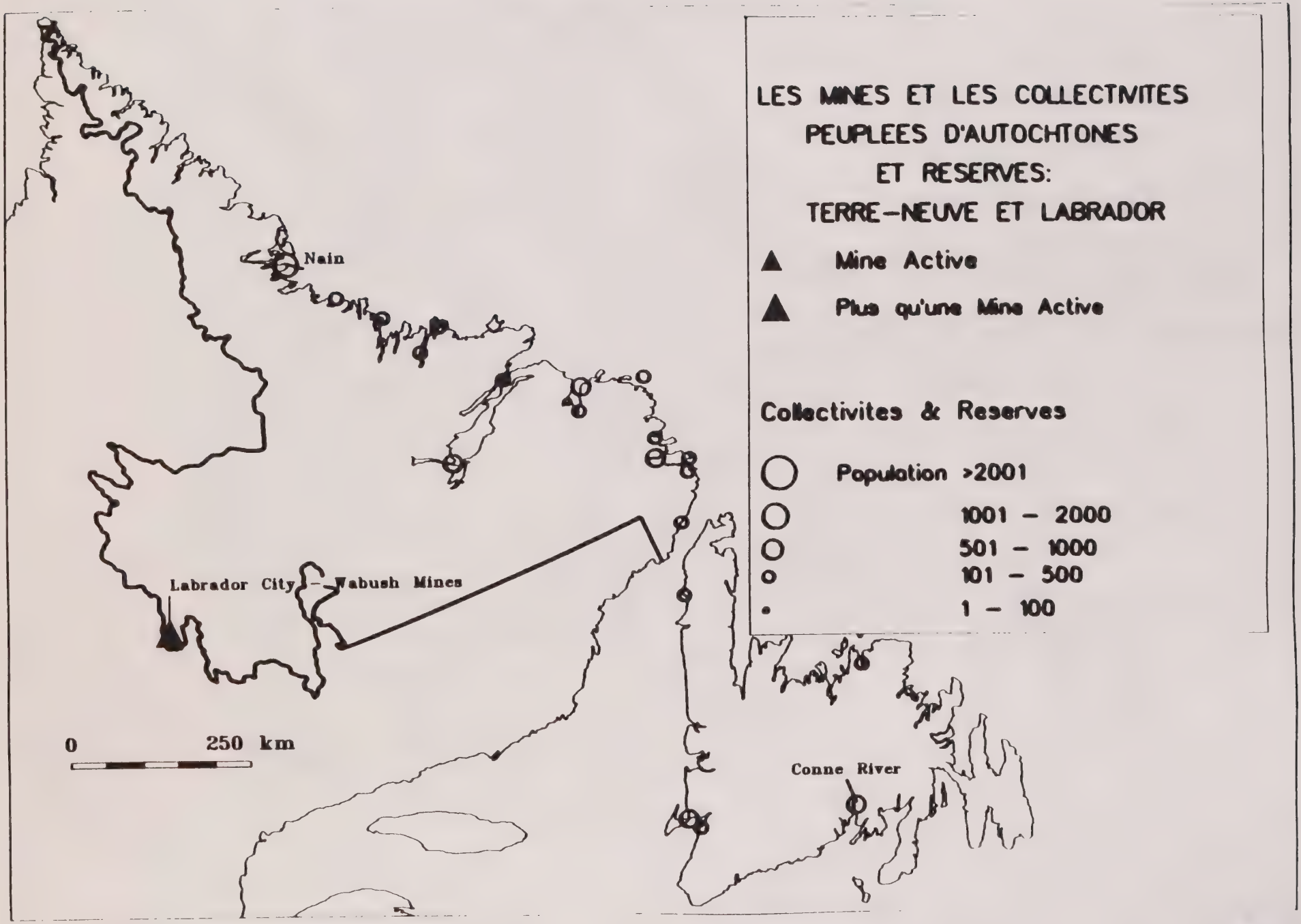

LES MINES ET LES COLLECTIVITES PEUPLEES D'AUTOCHTONES ET RESERVES: COLOMBIE-BRITANNIQUE
Mine Active
Collectivites & Reserves
Population >2001
1001 - 2000
501 - 1000
101 - 500
1 - 100
Fort Nelson 2 IR
Golden Bear Mine
Prince George
Bella Bella 1 IR
Silvana Mine
0
500 km

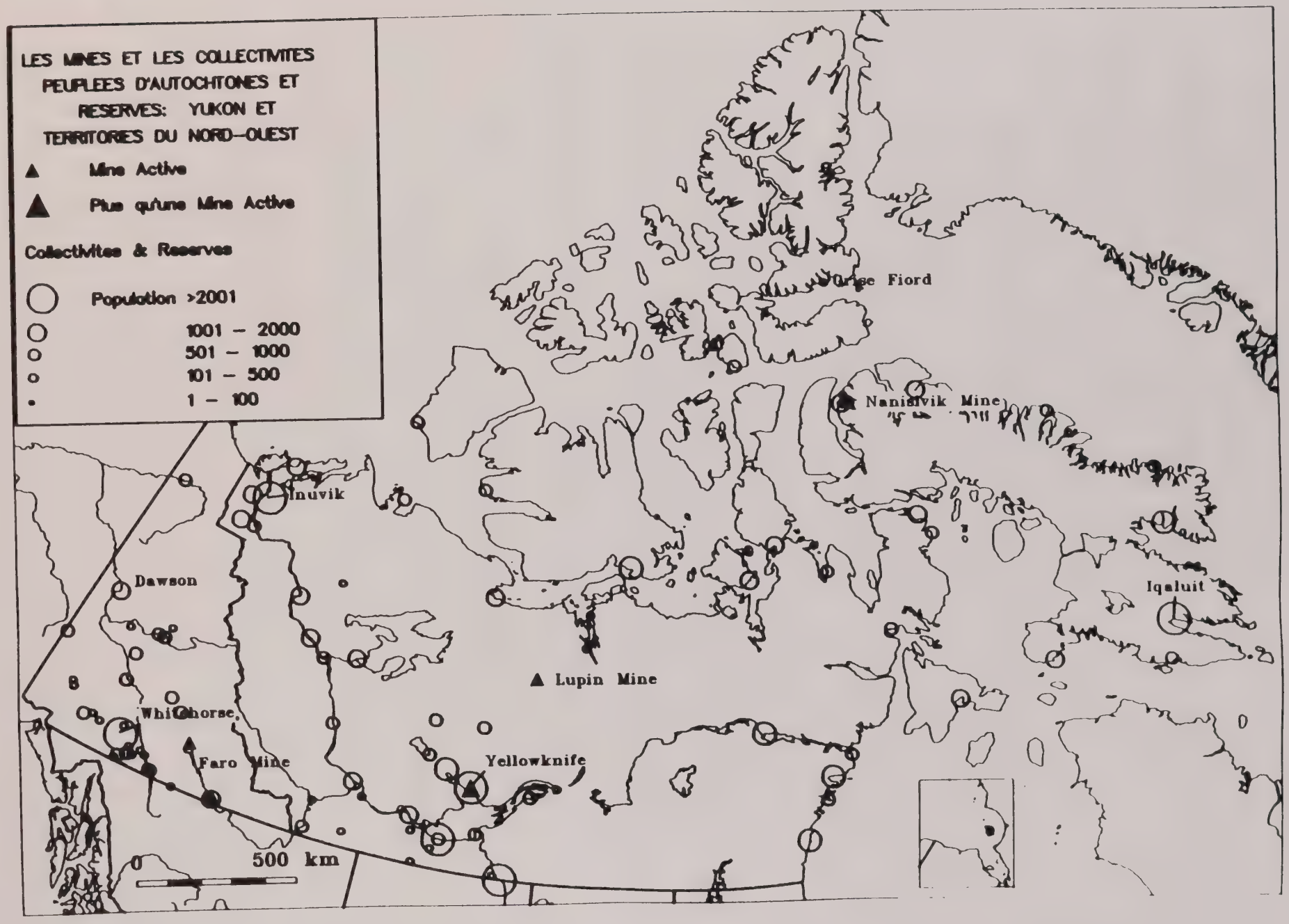

Fond Du Lac 227 IR
Churchill
Cluff Lake Mine
Thompson
Edmonton
Saskatoon
Blackfoot 146 IR
Roseau River 2 IR
500 km
LES MINES ET LES COLLECTIVITES PEUPLEES D'AUTOCHTONES ET RESERVES: PRAIRIE CANADIENNE
Mine Active
Plus qu'une Mine active
Collectivites & Reserves
Population >2001
1001 – 2000
501 – 1000
101 – 500
1 – 100


LES MINES ET LES COLLECTIVITES PEUPLEES D'AUTOCHTONES ET RESERVES: ONTARIO
Mine Active
Plus qu'une Mine Active
Collectivites & Reserves
Population >2001
1001 – 2000
501 – 1000
101 – 500
1 – 100
Pikangikum 14 IR
Shebandowan Mine
Sudbury Mines
Akwasasne 59 IR
0
500 km


LES MINES ET LES COLLECTIVITES PEUPLEES D'AUTOCHTONES ET RESERVES: QUEBEC
Mine Active
Plus qu'une Mine Active
Collectivites & Reserves
Population >2001
1001 – 2000
501 – 1000
101 – 500
1 – 100
Inukjuak
Mistassini IR
Gaspe Mine
Rouyn-Noranda Mines
Maniwaki 18 IR
0
500 km


Heath Steele Mine
Scotchfort 4 IR
Richibucto 15 IR
Eskasoni 3 IR
Gays River
Halifax
Wildcat 12 IR
0
100 km
LES MINES ET LES COLLECTIVITES PEUPLEES D'AUTOCHTONES ET RESERVES: REGION MARITIME
Mine Active
Plus qu'une Mine Active
Collectivites & Reserves
Population >2001
1001 – 2000
501 – 1000
101 – 500
1 – 100


LES MINES ET LES COLLECTIVITES
PEUPLEES D'AUTOCHTONES
ET RESERVES:
TERRE-NEUVE ET LABRADOR
Mine Active
Plus qu'une Mine Active
Collectivites & Reserves
Population >2001
1001 - 2000
501 - 1000
101 - 500
1 - 100
Nain
Labrador City - Wabush Mines
0
250 km
Conne River


LES MINES ET LES COLLECTIVITES PEUPLEES D'AUTOCHTONES ET RESERVES: YUKON ET TERRITORIES DU NORD-OUEST
Mine Active
Plus qu'une Mine Active
Collectivites & Reserves
Population >2001
1001 – 2000
501 – 1000
101 – 500
1 – 100
Inuvik
Dawson
Whitehorse
Faro Mine
Lupin Mine
Yellowknife
Nanisivik Mine
Iqaluit
0
500 km

ADDENDA A

SOURCES DES DONNÉES UTILISÉES POUR L'ÉTABLISSEMENT DES CARTES

EXPLOITATIONS MINIÈRES

Les exploitations minières représentées sur les cartes sont tirées de :

> Énergie, Mines et Ressources, Secteur de la politique minérale, Système d'information sur les gisements minéraux. mai 1991.

Les minéraux mentionnés sont le charbon, le cuivre, l'or, le fer, le plomb, le molybdène, le nickel, le platine, les métaux de la mine de platine, la potasse, l'argent, l'étain, l'uranium et le zinc. Seuls les gisements minéraux considérés comme étant en exploitation ont été utilisés.

RÉSERVES/ÉTABLISSEMENTS AUTOCHTONES/HAMEAUX DU NORD

Aux fins de la cueillette des données nécessaires à l'établissement des cartes, on a traité différemment les provinces et les territoires en raison de leurs différences inhérentes. Dans le cas des territoires, toutes les collectivités sont représentées tandis que dans le cas des provinces, seules les collectivités autochtones sont indiquées.

Dans le cas des provinces, les noms des réserves et des collectivités indiennes ainsi que les données démographiques pertinentes sont tirés de :

> Affaires indiennes et du Nord Canada. Terres, Revenus et Fiducie. Répertoire des bandes, réserves et établissements indiens. Ottawa : Approvisionnements et Services, 1990.

Les données démographiques représentent la population indienne des collectivités.

Dans le cas des Territoires du Nord-Ouest, les noms des collectivités et les données démographiques pertinentes sont tirés de :

> Gouvernement des Territoires du Nord-Ouest. Bureau de la statistique. «Northwest Territories Population Estimates», juin 1989.

Les données démographiques représentent la population totale des collectivités.

Les données sur les collectivités du Yukon sont un regroupement des données tirées de :

> Affaires indiennes et du Nord Canada. Terres, Revenus et Fiducie. Répertoire des bandes, réserves et établissements indiens. Ottawa : Approvisionnements et Services, 1990.
>
> Heming, R., éd. Yukon Data Book 1986-87. Whitehorse : Outcrop Ltd., 1986.

Les données démographiques sur les réserves et les collectivités indiennes sont tirées du Répertoire des bandes, réserves et établissements indiens et représentent par conséquent les chiffres réels de la population indienne. Les données démographiques sur les autres collectivités sont tirées des données du Recensement de 1986 et représentent par conséquent les chiffres de la population totale des collectivités.

Seuls Québec et Terre-Neuve comptent des collectivités inuit. Leurs noms sont tirés de :

> Énergie, Mines et Ressources Canada. Série de cartes de la Base de données de l'Atlas national : Agglomérations indiennes et inuit au Canada. cartes NADM-2 et NADM-3. Ottawa : Approvisionnements et Services, 1984.

Les données démographiques sont tirées des données sur le Recensement de 1986; elles représentent donc les chiffres de la population totale des collectivités.

Les emplacements des réserves, des collectivités autochtones et des collectivités nordiques sont tirés des documents énumérés ci-dessous. Dans environ 0,3 % des cas, les collectivités qui devaient être représentées sur les cartes n'ont pu être localisées et par conséquent ont été omises.

> AINC, Développement économique, Direction de l'exploitation des ressources, minéraux des Indiens (Ouest).
>
> Northwest Territories Data Book 1990/91. Yellowknife : Outcrop Ltd., 1990.
>
> Heming, R., éd. Yukon Data Book 1986-87. Whitehorse : Outcrop Ltd., 1986.

Énergie, Mines et Ressources Canada. Direction des levés et de la cartographie, Division des services de géographie. Répertoire géographique du Canada. Ottawa : Approvisionnements et Services.

Alberta : 1988
Colombie-Britannique : 1985
Manitoba : 1981
Nouveau-Brunswick : 1972
Terre-Neuve : 1983
Territoires du Nord-Ouest : 1980
Nouvelle-Écosse : 1977
Ontario : 1988
Île-du-Prince-Édouard : 1990
Saskatchewan : 1985
Yukon : 1988

Gouvernement du Québec. La Commission de toponymie. Répertoire toponymique du Québec 1987. Québec : Les Publications du Québec, 1987.

ANNEXE C

LISTE DE VÉRIFICATION VISANT À FACILITER LA TÂCHE DES SOCIÉTÉS MINIÈRES AYANT DES EXPLOITATIONS DANS DES SECTEURS SITUÉS À PROXIMITÉ DES COLLECTIVITÉS AUTOCHTONES

ANNEXE C

LISTE DE VÉRIFICATION VISANT À FACILITER LA TÂCHE DES SOCIÉTÉS MINIÈRES AYANT DES EXPLOITATIONS DANS DES SECTEURS SITUÉS À PROXIMITÉ DES COLLECTIVITÉS AUTOCHTONES

Au cours des dernières années, beaucoup de sociétés du domaine minier ont exprimé aux gouvernements leur volonté de communiquer davantage avec les autochtones et d'en apprendre davantage à leur sujet.

La présente liste de vérification a été élaborée pour fournir des directives à ces sociétés. Elle vise à faire en sorte que leurs contacts avec les autochtones soient le plus productifs possible.

Les présentes lignes directrices s'appliquent à toutes les étapes des activités, celles de l'exploration, du développement, de l'exploitation et même de la fermeture d'une mine. Elles devraient s'avérer utiles notamment à une société participant à un projet qui en est à un stade avancé de sa réalisation. En outre, advenant la vente d'une société, il est important de maintenir les possibilités de communication.

Afin d'obtenir des renseignements sur les autochtones de la province ou du territoire où doivent être réalisés des travaux de développement minier, on doit communiquer avec les organismes autochtones et gouvernementaux indiqués à l'addenda A (p. 43).

Pour aider les sociétés souhaitant fournir des renseignements sur leurs activités actuelles ou projetées ou faire connaître des postes offerts, nous avons élaboré la liste de journaux apparaissant dans l'addenda B (p. 45). Ceux-ci sont publiés par des organismes autochtones (par exemple, Windspeaker, en Alberta) ou diffusés dans des régions comportant une population autochtone importante (par exemple, News/North, dans les Territoires du Nord-Ouest).

LISTE DE VÉRIFICATION VISANT À FACILITER LA TÂCHE AUX SOCIÉTÉS MINIÈRES AYANT DES EXPLOITATION DANS DES SECTEURS SITUÉS À PROXIMITÉ DE COLLECTIVITÉS AUTOCHTONES

Avant d'amorcer vos opérations et d'établir les contacts initiaux, commencez par prendre connaissance des règles et règlements (le cas échéant) susceptibles d'avoir une incidence sur vos rapports avec les autochtones :

( ) Règles et règlements provinciaux ou territoriaux concernant les autochtone (par exemple, est-ce-qu'une entente officielle sur les aspects sociaux-économiques ou un plan sur les ressources humaines sont nécessaires?).
( ) Situation des revendications territoriales - en suspens ou réglées.
( ) Incidence, s'il y a lieu, de la revendication territoriale d'un groupe sur les plans de la société.
( ) Est-ce-qu'il existe un autre type d'entente en vigueur susceptible d'avoir une incidence sur votre projet (par exemple, l'entente sur les mesures provisoires relatives à la Nation nishnawbe-aski)?
( ) Existence de programmes gouvernementaux pour encourager la participation des autochtones à votre projet?

Avant les contacts initiaux, essayez d'en apprendre le plus possible sur les autochtones locaux :

( ) Lieux des réserves situées à proximité - peuplées ou non.
( ) Emplacements des collectivités autochtones des environs.
( ) Lieux des terres, des étendues d'eau, etc., utilisées traditionnellement par les autochtones.
( ) Personnes avec qui communiquer (par exemple, nom du chef de bande, du maire, etc.)

Raisons de la volonté de la société de communiquer avec les autochtones locaux :

( ) Par simple courtoisie (par exemple, votre société souhaite procéder à l'exploration ou au développement d'un emplacement sur les lieux ou près d'une terre traditionnelle des autochtones locaux).
( ) Les informer des plans de la société.
( ) Connaître leurs préoccupations au sujet du projet et examiner les moyens de les atténuer.
( ) Faire en sorte qu'ils comprennent bien en quoi consiste le projet.
( ) Pour connaître les disponibilités des collectivités en matière de main-d'oeuvre et d'entreprises locales.

( ) Pour connaître les besoins et les disponibilités en matière de programmes de formation.
( ) Pour faire preuve de bonnes pratiques en matière d'affaires.

Avec qui communiquer? :

( ) Vu que, en ce qui concerne les activités traditionnelles, le secteur visé peut être étendu, vous devrez peut-être rencontrer des personnes d'un certain nombre de collectivités autochtones.
( ) Il faudrait procéder aux premiers contacts au niveau bureaucratique ou politique :
- chef de bande, maire, conseil de bande, anciens, etc.
- agent local chargé du développement économique et de l'emploi

( ) Il faudrait également communiquer avec le public en général :
- séances publiques d'information
- réunions à l'hôtel de ville ou séances de questions et réponses

( ) faire appel aux médias locaux, notamment à la presse autochtone (si elle existe) pour informer la ou les collectivités de ce que la société est en train de faire ou prévoit faire.

De quoi informer les résidents locaux? :

( ) Ce que la société prévoit faire (par exemple, réaliser des activités d'exploration, exploiter un gisement, acheter une société, etc.).
( ) Emplacement effectif de l'exploitation prévue.
( ) Si vous êtes au courant, parlez du type d'exploitation proposé :
- recherche ou exploitation de minéraux.
- type de mine (par exemple, à ciel ouvert ou souterraine.
- type d'hébergement (par exemple, établissement d'un lotissement urbain ou d'une navette pour les employés)
- importance de la main-d'oeuvre requise, scolarités et compétences nécessaires
- lieu du bureau d'embauche
- roulement ou horaire prévus des équipes de travail
- programmes interculturels prévus

( ) Si vous prévoyez un programme actif d'embauche des autochtones, adressez-vous à la collectivité relativement à la possibilité d'obtenir un coordonnateur de l'emploi des autochtones.
( ) Si une entente socio-économique officielle n'est pas nécessaire, pensez qu'il y aurait peut-être lieu d'en conclure une de façon volontaire.

( ) Problèmes ou préoccupations possibles en matière d'environnement et mesures d'atténuation proposées (haussez-les vous-même).

Renseignements à obtenir auprès des autochtones locaux :

( ) Disponibilité et caractéristiques de la main-d'oeuvre locale.
( ) Disponibilité et nature des entreprises locales (par exemple, sources possibles de matériaux de construction).
( ) Aimeraient-ils conclure une entente volontaire en matière socio-économique.
( ) Leurs préoccupations sur les répercussions sociales possibles.
( ) Leurs préoccupations au sujet des répercussions environnementales possibles.

Poursuivre les contacts amorcés aux premiers stades de la réalisation du projet :

( ) Aussi, lorsque vous prenez la relève d'une autre société.
( ) Pour assurer le maintien des bonnes relations élaborées au départ.

ADDENDA A

SOURCES DE RENSEIGNEMENTS CONCERNANT LES AUTOCHTONES

Pour plus de renseignements sur les autochtones de la province ou du territoire où se situe (doit se situer) le projet d'exploitation minière, on peut communiquer avec les organismes suivants :

Sièges sociaux nationaux des organismes autochtones

Assemblé des premières nations, Ottawa	(613) 236-0673
Association des femmes autochtones du Canada, Ottawa	(613) 236-6057
Association nationale des centres d'accueil, Ottawa	(613) 563-4844
Conseil national des autochtones du Canada, Ottawa	(613) 238-3511
Conseil national des Métis, Saskatoon	(306) 373-8855
Inuit Tapirisat du Canada, Ottawa	(613) 238-8181

Ministères des gouvernements fédéral, provinciaux et territoriaux

Ministère des Affaires indiennes et du Nord canadien

Administration centrale :	Hull (QC)	(819) 997-0380
Bureaux régionaux :	Amherst (N.-É.) (Atlantique)	(902) 667-3818
	Québec (QC)	(418) 648-7562
	Toronto (Ont.)	(416) 973-6215
	Winnipeg (Man.)	(204) 983-6397
	Regina (Sask.)	(306) 780-5945
	Edmonton (Alb.)	(403) 495-7064
	Vancouver (C.-B.)	(604) 666-5100
	Whitehorse (Yuk.)	(403) 667-3314
	Yellowknife (T.N.-O.)	(403) 920-8282

Ministères provinciaux et territoriaux

Nouveau-Brunswick
Affaires Intergouvernementales
Fredericton, Nouveau-Brunswick (506) 453-2579

Ontario
Division des Mines et des Minéraux
Ministère du Development du Nord et des Mines
Sudbury, Ontario (705) 670-7250

Manitoba
Énergie et Mines Manitoba
Winnipeg, Manitoba (204) 945-6505

Affairs du Nord Manitoba
Winnipeg, Manitoba (204) 945-0572

Saskatchewan
Indian and Metis Affairs Secretariat
Regina, Saskatchewan (306) 787-6250

Alberta
Native Services Unit
Edmonton, Alberta (403) 422-5925

Colombie-Britannique
Direction de la Politique minérale
Ministère de l'Énergie, des Mines
et des Ressources pétrolières
Victoria, Colombie-Britannique (604) 387-3787

Yukon
Développement économique :
Mines et Petites entreprises
Whitehorse, Yukon (403) 667-5384

Territoires du Nord-Ouest
Énergie, Mines et Ressources pétrolières
Yellowknife, Territoires du Nord-Ouest (403) 873-7086

ADDENDA B

PUBLICATIONS RELATIVES AUX AFFAIRES AUTOCHTONES ET AUX AFFAIRES DU NORD SUSCEPTIBLES D'AFFICHER LES OFFRES D'EMPLOI

La liste suivante de journaux, bulletins et revues a été préparée à l'intention des sociétés d'exploitation minière désireuses d'informer les résidents de la région, particulièrement les autochtones, des débouchés en matière d'emploi et des activités des sociétés.

Cette liste est fondée sur le rapport de 1989 sur les publications du Nord ou des autochtones accessible à la bibliothèque du ministère des Affaires indiennes et du Nord canadien. Afin de tenir compte des changements récents dans le domaine de la presse autochtone, nous avons communiqué avec les éditeurs des publications figurant sur la liste du MAINC. Le principal critère appliqué à la sélection des publications figurant sur cette liste repose sur la publication régulière des offres d'emploi.

Pour avoir accès à ces possibilités en matière de publicité, veuillez communiquer avec les conseils tribaux locaux ou les centres d'accueil.

Chaque entrée contient les renseignements suivants: titre de la publication, lieu de publication, éditeur, fréquence, langue, principal lieu de distribution, public visé - si celle-ci ne s'adresse pas particulièrement aux autochtones.

TERRE-NEUVE/LABRADOR

Kinatuinamot Ilengajuk Nain, Labrador: Association des Inuit du Labrador. Mensuel. Inuktitut et anglais. Distribué principalement au Labrador. Devrait retourner à l'impression en août 1991.

Labradorian Happy Valley - Goose Bay, Labrador: Robinson-Blackmore. Mensuel. Anglais. Distribué principalement au Labrador. Ne s'adresse pas particulièrement aux autochtones.

NOUVELLE-ÉCOSSE

Micmac Maliseet Nations News Truro, Nouvelle-Écosse: Confédération des Micmacs continentaux. Mensuel. Anglais. Distribué principalement dans la région des Maritimes et du Québec.

Micmac News Sydney, Nouvelle-Écosse: Union des Indiens de la Nouvelle-Écosse. Mensuel. Anglais. Distribué principalement dans la région des Maritimes.

NOUVEAU-BRUNSWICK

Mal-l-mic News Fredericton, Nouveau-Brunswick: Association des Métis et des Indiens non inscrits du Nouveau-Brunswick. Trimestriel. Anglais. Distribué principalement au Nouveau-Brunswick.

Miramichi Leader Newcastle, Nouveau-Brunswick: Cadogan Publishing Limited. Hebdomadaire. Anglais. Distribué en grande partie dans la région.

Miramichi Weekend Newcastle, Nouveau-Brunswick: Cadogan Publishing Limited. Hebdomadaire. Anglais. Distribué en grande partie dans la région.

QUÉBEC

Alliance Hull, Québec: Alliance autochtone du Québec. Mensuel. Français/anglais. Distribué principalement aux Métis et aux Indiens non inscrits du Québec.

Chewitan Chibougamau, Québec: Centre des Cris de Chibougamau. Mensuel. Anglais. Distribué principalement dans la région.

Indian Time Roosenvelton, New-York, U.S.A.: Akwesasne Communications Society. Mensuel. Anglais. Distribué principalement dans la région.

ONTARIO

Council Fires Blind River, Ontario: Conseil tribal de North Shore. Mensuel. Anglais. Distribué principalement dans la région.

Jibkenyan Wallaceburg, Ontario: Conseil de Walepole Island. Toutes les deux semaines. Anglais. Distribué principalement dans la région.

Kenora Daily Miner Kenora, Ontario: Bowes Publishing. Quotidien. Anglais. Distribué principalement dans la région. Ne s'adresse pas particulièrement aux autochtones.

Tekawennake Oshweken, Ontario: Tekawennake Publications. Mensuel. Anglais. Distribué principalement dans la région.

Wawatay News Sioux Lookout, Ontario: Wa-Wa-Ta Native Communications Society. Toutes les deux semaines. Saulteux-cri/anglais. Distribué principalement aux collectivités autochtones établies au nord de Sioux Lookout.

MANITOBA

Nickel Belt News Thompson, Manitoba: Precambrian Press. Hebdomadaire. Anglais. Distribué principalement au nord du Manitoba. Ne s'adresse pas particulièrement aux autochtones.

Opasquia Times Le Pas, Manitoba: New North Ventures Ltd. Bihebdomadaire. Anglais. Distribué principalement dans la région. Ne s'adresse pas particulièrement aux autochtones.

Thompson Citizen Thompson, Manitoba: Precambrian Press. Bihebdomadaire. Anglais. Distribué principalement dans la région. Ne s'adresse pas particulièrement aux autochtones.

Weetamah Winnipeg, Manitoba: Mikisiw Printing. Toutes les deux semaines. Anglais. Distribué principalement au Manitoba.

SASKATCHEWAN

Gold Belt Gazette Creighton, Saskatchewan: Eric Shaw. Bihebdomadaire. Anglais. Distribué principalement à Creighton et à Flin Flon, dans la région du Manitoba. Ne s'adresse pas particulièrement aux autochtones.

La Ronge Northerner La Ronge, Saskatchewan. Hebdomadaire. Anglais. Distribué principalement dans le nord de la Saskatchewan. Ne s'adresse pas particulièrement aux autochtones.

New Breed Saskatoon, Saskatchewan: Saskatchewan Native Communications. Mensuel. Anglais. Distribué à la grandeur du Canada.

North Battleford Optimist North Battleford, Saskatchewan: MacIntosh Publishing Company. Bihebdomadaire. Anglais. Distribué principalement dans la région. Ne s'adresse pas particulièrement aux autochtones.

Northwest Eagle Meadow Lake, Saskatchewan: Meadow Lake PrintersLtd. Mensuel. Anglais. Distribué principalement dans le nord-ouest de la Saskatchewan.

Saskatchewan Indian Saskatoon, Saskatchewan: Saskatchewan Indian Media Corporation. Mensuel. Anglais. Distribué principalement en Saskatchewan.

ALBERTA

Alberta Native News Edmonton, Alberta: 320754 Alberta Ltd. Mensuel. Anglais. Distribué principalement en Alberta.

Kainai News Standoff, Alberta: Indian News Media. Toutes les deux semaines. Anglais. Distribué dans toute l'Amérique du Nord ainsi qu'à l'étranger.

Native Network News Edmonton, Alberta: Nations métisses de l'Alberta. Mensuel. Anglais. Distribué principalement en Alberta et dans l'Ouest canadien.

Plains Cree Today Saddle Lake, Alberta: Mensuel. Anglais. Distribution locale, appelée à s'étendre à toute la région sous peu.

Strathmore Standard Strathmore, Alberta: Bowweb Publishing Company. Hebdomadaire. Anglais. Distribué principalement dans la région. Ne s'adresse pas particulièrement aux autochtones, même s'il contient régulièrement le Siksika News sous forme d'encart.

Windspeaker Edmonton, Alberta: Aboriginal Multi-media Society of Alberta. Toutes les deux semaines. Anglais. Distribué principalement en Alberta et en Saskatchewan.

COLOMBIE-BRITANNIQUE

Dakelh dustl'us Prince-George, Colombie-Britannique: Conseil tribal des Carriers-Sekannis. Trimestriel. Anglais. Distribué principalement dans la région.

Ha-shilth-sa Port Alberni, Colombie-Britannique: Conseil tribal des Nuu-Chah-Nulth. Anglais. Mensuel. Distribué principalement en Colombie-Britannique.

Kahtou Vancouver, Colombie-Britannique: Kahtou Communications Inc. Mensuel. Anglais. Distribué principalement en Colombie-Britannique.

Native Voice Vancouver, Colombie-Britannique: Fraternité des Indiens de la Colombie-Britannique. Bimestriel. Anglais. Distribué principalement en Colombie-Britannique.

Northern Sentinel Kitimat, Colombie-Britannique: Mitchelle

Press. Bihebdomadaire. Anglais. Distribué principalement dans la région. Ne s'adresse pas particulièrement aux autochtones.

Prince Rupert Daily News Prince Rupert, Colombie-Britannique: Quotidien. Anglais. Distribué principalement dans la région.

Secwepemc News Kamloops, Colombie-Britannique: Secwepemc Cultural Education Society. Mensuel. Anglais. Distribué surtout dans le centre de la province.

Sto:lo Nation News Sardis, Colombie-Britannique: Centre d'apprentissage Coqualeetza. Mensuel. Anglais. Distribué principalement dans la région.

YUKON

Dan Sha Whitehorse, Yukon: Ye Sa To Communications Society. Mensuel. Anglais. Distribué principalement au Yukon.

Klondike Sun Dawson, Yukon: Literacy Society of the Klondike. Mensuel. Anglais. Distribué principalement au Yukon. Ne s'adresse pas particulièrement aux autochtones.

Whitehorse Star Whitehorse, Yukon: Whitehorse Star Ltd. Quotidien. Anglais. Distribué principalement au Yukon. Ne s'adresse pas particulièrement aux autochtones.

Yukon News Whitehorse, Yukon: Media North Ltd. Bihebdomadaire. Anglais. Distribué principalement au Yukon. Ne s'adresse pas particulièrement aux autochtones.

TERRITOIRES DU NORD-OUEST

The Hub Hay River, Territoires du Nord-Ouest: Hub Publications Ltd. Hebdomadaire. Anglais. Distribué principalement au sud de la région du lac des Esclaves. Ne s'adresse pas particulièrement aux autochtones.

Inuvik drum Inuvik, Territoires du Nord-Ouest: Northern News Services. Hebdomadaire. Anglais. Distribué principalement dans la région. Ne s'adresse pas particulièrement aux autochtones.

L'Aquilon Yellowknife, Territoires du Nord-Ouest: L'Aquilon. Bihebdomadaire. Français. Distribué principalement dans la région. Ne s'adresse pas particulièrement aux autochtones.

Mackenzie Times Fort Simpson, Territoires du Nord-Ouest: CanArctic Graphics. Hebdomadaire. Anglais. Distribué principalement dans la région du Delta du Mackenzie. Ne s'adresse pas particulièrement aux autochtones.

News/North Yellowknife, Territoires du Nord-Ouest: Northern News Services. Mensuel. Anglais. Distribué principalement dans les Territoires du Nord-Ouest. Ne s'adresse pas particulièrement aux autochtones.

Nunatsiaq News Iqaluit, Territoires du Nord-Ouest: Nortext. Hebdomadaire. Inuktitut/anglais. Distribué principalement dans l'Arctique de l'Est.

Press Independent Yellowknife, Territoires du Nord-Ouest: Native Communications Society of Western Northwest Territories. Hebdomadaire. Anglais. Distribué dans l'Arctique de l'Ouest.

Slave River Journal Fort Smith, Territoires du Nord-Ouest: Cascade Publishing. Hebdomadaire. Anglais. Distribué principalement dans l'Arctique de l'Ouest et dans le nord de l'Alberta. Ne s'adresse pas particulièrement aux autochtones.

Tusaayaksat Inuvik, Territoires du Nord-Ouest: Inuvialuit Communications Society. Toutes les deux semaines. Anglais/inuvialukton. Distribué principalement dans l'Arctique de l'Ouest.

Yellowknifer Yellowknife, Territoires du Nord-Ouest: Northern News Services. Bihebdomadaire. Anglais. Distribué principalement dans la région. Ne s'adresse pas particulièrement aux autochtones.

ANNEXE D

RÉSUMÉS DES

ACCORDS SOCIO-ÉCONOMIQUES

ANNEXE D

RÉSUMÉ DES ACCORDS SOCIO-ÉCONOMIQUES

1. INTRODUCTION

Le présent document résume les dispositions de plusieurs accords socio-économiques conclus par diverses industries d'exploitation des ressources hors des réserves[4]. Il a pour but d'informer tous ceux qui prennent part à des projets d'exploitation des ressources naturelles, des clauses qui ont été utilisées dans ces accords. Il a pour but de vous servir de gouverne seulement.

Les accords socio-économiques, qui peuvent être négociés entre la compagnie, différent niveaux de gouvernement et de la communauté, cherchent a rehausser le climat économique de la communauté locale[5] en encourageant leur participation dans le développement économique. Ils fournissent l'occasion aux entreprises locales et aux résidents locaux à des emplois et à de la formation, des possibilités d'entreprises et de services contractuels. Les accords favorisent aussi la croissance et le développement de la collectivité locale par l'éducation, les consultations et le maintient de leur style de vie et de leur culture traditionnelle.

Les exigences concernant les obligations pour et l'usage des accords socio-économiques sont différentes dans chaque juridiction. Un résumé des différentes exigences est inclut à l'addenda A (p. 63).

2. OBJET

L'objectif d'un accord socio-économique est de développer une structure afin de faciliter l'usage des ressources par le Canada, la province, la compagnie et les résidents locaux afin de profiter à toutes les parties. La clause d'intention peut aussi inclure la justification des participants à la création d'un accord socio-économique.

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[4] À noter que pour cette partie du rapport, on a consulté seulement les accords hors des réserves. L'exploitation des ressources dans les réserves indiennes est assujettie à différents règlements et lois reliés aux ressources.

[5] L'expression collectivité locale a été choisi afin de représenter la population qui réside le plus près de l'endroit où se trouve la mine. On y désigne en particulier, sans s'y limiter, les résidents du Nord canadien et les autochtones du Canada.

3. RECRUTEMENT ET FORMATION

L'emploi des résidents locaux par l'industries d'exploitation des ressources est peut-être l'avantage économique le plus direct pour les deux parties. La compagnie dispose d'une main-d'oeuvre immédiate et la collectivité bénéficie d'une variété de débouchés. Les programmes d'emploi, les programmes de formation et les autres dispositions relatives à l'emploi augmentent encore plus la main-d'oeuvre locale disponible pour travailler dans la mine. L'emploi et les programmes de formation faisait parti de tout les accords étudiés.

a) Priorité du recrutement

La compagnie peut développer une politique de recrutement d'emploi qui donne priorité aux résidents locaux de la collectivité. Le recrutement dans la région touchée est facilité par certaines méthodes, notamment le recours aux bureaux locaux de recrutement d'Emploi et Immigration Canada (EIC), des visites dans les collectivités et la publication d'avis d'emploi au sein des collectivités. Le recrutement en dehors des collectivités locales peut être fait après le recrutement locale, recherche dans le territoire/province principale, les territoires/provinces avoisinantes, le Canada et les pays étrangers.

La compagnie peut développer une politique afin d'assurer que tout efforts vont être mis en pratique afin d'avoir un pourcentage minimum de la main-d'oeuvre local. La compagnie peut développer une politique afin de s'assurer que le nombre de résidents locaux employés soit limitée seulement par la capacité de la main-d'oeuvre locale. Par exemple, une compagnie voulait une main-d'oeuvre autochtone de 20 pour-cent, alors qu'une autre compagnie avait établi une politique d'employé 50 pour-cent Inuit et 50 pour-cent non-Inuit.

b) Programmes de formation

La compagnie peut développer une politique afin que leur programmes de formation soit conçus pour améliorer les compétences et l'éducation de leur employés.

La compagnie peut établir des programmes de formation de planification ou opérationnels pour les résidents locaux, qui possèdent des critères en éducation, en formation technique et en emploi spécifiques à la position disponible et/ou postulé.

La compagnie peut développer et mettre à exécution un programme de perfectionnement éducatif par la pratique, de compétences techniques et d'apprentissage pour les résidents locaux, baser sur les besoins futurs de main-d'oeuvre.

La compagnie peut travailler en collaboration avec les établissements d'enseignement locaux, concevoir des programmes, à l'intention des établissements, qui satisferont les exigences d'emploi de la compagnie et des autres employeurs régionaux.

La compagnie peut s'assurer que l'éducation et la formation ne sera pas limitée afin de faciliter l'emploi seulement avec la compagnie ou les contracteurs.

La compagnie peut s'assurer que la formation et le perfectionnement des employés sont conformes aux exigences des programmes d'apprentissage provinciaux ou territoriaux et sont crédités pour la reconnaissance des titres de compétence ou reconnu par le ministère de l'éducation territorial/provincial en conformité avec le programmes d'apprentissage et fournisseur.

La compagnie peut négocier avec le ministère provincial ou territorial de l'Éducation afin d'obtenir son assistance dans la conception et la livraison du programme de formation de la compagnie. Le ministère de l'Éducation fournit souvent le matériel didactique et s'occupe de l'élaboration des programmes d'études.

Les programmes sont habituellement conçu en collaboration et l'assistance du ministère provincial ou territorial de l'Éducation et les programmes d'emploi des nordiques et des autochtones.

c) d'autres clauses portant sur la formation

1) Comité des perspectives d'emploi

La compagnie peut assurer une gestion efficace des ses politiques en matière de ressources humaines en formant un comité des perspectives d'emploi. Le comité serait formé de personnes touchées par l'accord ou la mise en valeur ou des personnes en cause (par ex. la compagnie, des résidents locaux, les gouvernements, le syndicat). Les objectifs du comité serait:

mettre en oeuvre et surveiller les politiques d'emploi. Le comité conduirait des sessions de recrutement dans les collectivités locales et faciliterait l'occasion d'emploi aux résidents locaux ;

assurer que les opportunités d'emploi soient en premier lieu aux résidents locaux et effectuer le recrutement de personnel dans d'autre régions ;

participer à l'élaboration et mis en oeuvre de programmes de formation selon les demandes ouvrières et surveiller l'éducation, la formation et les autres bénéfice d'emploi ; et

déterminer et négocier le soutien financier du gouvernement pour les programmes de formation.

2) Agent de liaison / coordonnateur de l'emploi des autochtones

La compagnie peut embauchée une personne autochtone locale afin d'aider les employés autochtones en assurant la liaison avec les cadres supérieurs de la compagnie. Les attributions de ce poste comprennent les tâches de recruter le personnel dans les collectivités locales, collaborer à la formation et à l'orientation des employés autochtones et assurer la consultation durant l'élaboration des politiques d'emploi pour autochtones.

3) Aide au déplacement

La compagnie peut accepter de fournir une aide au déplacement et des services de soutien à l'emploi aux employés qui déménagent avec leur famille immédiate à la ville.

4) Rotation du travail

La compagnie, avec l'accord des employés concernés, peut mettre en place des calendriers spéciaux de rotation du travail afin de permettre la poursuite d'activités traditionnelles.

La compagnie qui fait la navette aérienne de ses employés peut mettre en place des calendriers spéciaux de rotation du travail afin de minimiser les répercussions de la séparation des familles. Par exemple, une compagnie avec une rotation de travail de 10 semaines de travail/2 semaines de repos a développé une rotation de travail de 6 semaines de travail/4 semaines de repos pour les Inuits.

5) Discipline

La compagnie peut faire en sorte que des mesures disciplinaires soient rapidement prises contre les superviseurs ou contremaîtres qui auront des attitudes ou un comportement discriminatoires à l'endroit des employés autochtones.

6) Aide au transport

La compagnie qui requière une navette aérienne pour ses employés peut aider le financement ou fournir le transport à destination et en provenance du lieu de travail. Pour les employés de régions éloignés, la compagnie peut fournir le transport gratuitement ou le transport subventionné ou faire les arrangements pour d'autres moyen de transport.

7) Programme de bourses d'études

La compagnie peut promouvoir des études avancées en mettant en place un programme d'éducation post-secondaire. Des bourses d'études post-secondaires pour les enfants des employés ou pour les résidents locaux qui satisfaisent les critères d'admissibilité. Les bourses peuvent être limitées à un domaine d'études en particulier.

8) Programme de sensibilisation des jeunes

La compagnie peut assurer d'avoir un nombre suffisant de candidats compétents dans l'avenir, en informant les jeunes de la place des possibilités de carrière qu'ils ont dans le domaine de l'exploitation minière. Les jeunes peuvent donc poursuivre leur formation afin d'obtenir la scolarité requise. Certains accords prévoyaient des programmes destinés aux jeunes de la place qui leur permettaient de participer à diverses activités d'initiation au travail.

9) Orientation

La compagnie peut fournir des services aux employés en les aidant sur le plan professionnel, personnel, financier et autre.

10) Usage de la langue autochtone, de l'anglais et du français

Le ministre territorial ou provincial peut faire des efforts afin de fournir la formation industrielle en anglais ou en français afin d'effectuer un transfert de compétences à l'ouvrage.

La compagnie peut, en pratique, publier en anglais et dans la langue des autochtones de l'endroit (e.g. Inuktitut), les informations sur les activités de la compagnie. La compagnie peut aussi fournir les services d'un interprète à toutes les réunions entre la compagnie et la collectivité.

La compagnie peut, en pratique, développer des programmes d'études et des instructions verbales dans la langue des autochtones de la place.

11) Formation culturelle

La compagnie peut afin de réduire au minimum la discrimination et de sensibiliser davantage le personnel aux conditions culturelles, économiques et sociales des résidents locaux, offrir des programmes de formation et d'orientation inter-culturelle pour le personnel de supervision et de la gestion ainsi que pour les autres employés. Réciproquement, certaines compagnies ont également pris des mesures afin de familiariser les employés autochtones à certains aspects de la culture non autochtone.

La compagnie peut reconnaître les activités économiques traditionnelles qui demeurent importantes pour certains résidents locaux. La compagnie peut s'efforcer de satisfaire aux demandes du personnel concernant la poursuite de la chasse, la pêche, le piégeage et la culture du riz par des calendriers spéciaux de rotation du travail. La compagnie peut aider l'employé qui désire suivre leur formation tout en s'adonnant à leurs activités traditionnelles.

La compagnie peut fournir les fonds pour des études d'impact sur le niveau présent et passé de la moisson traditionnelle afin d'identifier les restrictions et les occasions pour les employés et la compagnie même. La compagnie peut se servir de l'étude d'impact afin de mettre en place des critères si des résultat négatifs se sont produits à la suite de l'exploitation des ressources.

La compagnie peut indemniser les résidents locaux et les résidents locaux autochtones pour la perte de bénéfices de leur moisson traditionnelle et les activités qui sont directement touchées par l'exploitation des ressources.

4. DÉVELOPPEMENT ÉCONOMIQUE ET CRÉATION D'ENTREPRISES

Tout projet de mise en valeur des ressources change la structure économique de la région, en stimulant l'économie locale et en créant des emplois et des possibilités d'entreprises. Le gouvernement local et la collectivité peuvent bénéficier d'une bonne planification et de la mise en oeuvre efficace des programmes de développement économique. La compagnie peut appuyer les programmes de développement économique en fournissant de l'information et en élaborant des politiques qui favorisent le recours aux approvisionnements et services de la collectivité locale.

a) Possibilités d'entreprises locales

La compagnie, en collaboration avec les résidents locaux et les entreprises locales, doit concevoir des politiques et mettre en oeuvre des programmes qui optimisent la participation de l'entreprise locale à toutes les phases de l'exploitation des ressources.

La compagnie peut assurer que la priorité est donnée aux entreprises locales lorsque le prix, le délai de livraison et la qualité sont concurrentiels.

La compagnie peut aider aux entreprises locales en fournissant de l'information sur les approvisionnements et services à la Chambre de commerce local, aux autres entreprises ainsi qu'aux demandes individuelles.

b) Comité de développement économique et de création d'entreprises

La compagnie peut créer des comités de développement économique et de création d'entreprises dans la région locale. Ces comités seraient formés de personnes touchées par l'accord ou le projet de développement (compagnie, résidents locaux, gouvernement, syndicat). Ces comités seraient responsable de mettre en oeuvre et de surveiller les politiques de développement économique, d'assurer que les avantages tirés des débouchés d'entreprise vont d'abord aux entreprises et résidents locaux, et d'aider la compagnie à obtenir les biens et services requis efficacement et d'une manière rentable.

c) d'autres clauses portant sur le développement économique et la création d'entreprises

1) Appels d'offres

La compagnie peut organiser des ateliers dans la collectivité locale afin d'informer les entreprises locales sur la façon dont la compagnie acquiert les biens et services.

La compagnie peut considérer, ou c'est possible et pratique,

- fournir des marchés aux entreprises locales sans passer par le processus d'appel d'offres normal
- donner aux entreprises locales la première chance de satisfaire le prix et les services de la compagnie
- avoir recours à l'appel d'offres limité ou à l'invitation d'appels d'offres seulement.

La compagnie peut dispenser le dépôt d'adjudication pour les entreprises locales.

2) Provisions spéciales

La compagnie peut fournir, ou possible et pratique, fractionner les contrats ou les pouvoirs d'achats.

La compagnie peut aider aux financement, dépendant du projet viable proposer par un résident local, à l'achat d'équipement spécial qui permettra aux nouvelles entreprises locales de participer à l'exploitation des ressources.

La compagnie peut ne pas exiger les garanties requises pour les entreprises locales.

La compagnie peut garantir par écrit, aux entreprises ou entrepreneurs locaux, afin de faciliter l'accès au financement.

5. AIDE SUR LE PLAN SOCIAL, CULTUREL ET COMMUNAUTAIRE

Il est souvent dans le meilleur intérêt de toutes les parties que la compagnie fasse des efforts, avec la collaboration et l'aide de la collectivité locale, pour instaurer des programmes d'aide sur le plan social, culturel et communautaire. Ces programmes facilitent une meilleure compréhension et communication entre les parties et créent une atmosphère communautaire saine.

a) Comité du soutien communautaire

La compagnie peut établir un comité chargé de coordonner les efforts de la compagnie, de la collectivité et des services gouvernementaux dans le domaine du soutien social, culturel et communautaire. Le comité serait responsable d'élaborer et de mettre en oeuvre les politiques de développement communautaire; de cerner les besoins de la collectivité et de négocier le financement des projets communautaires; et de faciliter la communication entre la mise en valeur des ressources et la collectivité locale.

b) d'autres clauses portant sur la collectivité locale

1) Communication

La compagnie peut accepter de préparer et de distribuer un bulletin ou un rapport mensuel afin de tenir les résidents locaux et les entreprises locales au fait de l'avancement du projet de développement minier, des emplois et autres faits spéciaux;

La compagnie peut rencontrer périodiquement les représentants des résidents locaux afin d'obtenir leur apport et leur opinion sur les répercussions des politiques et activités de la compagnie sur la collectivité locale; et

La compagnie peut assurer que la traduction de toutes informations disséminées au public soient en anglais et/ou français et dans la langue autochtone locale.

2) Protection de l'environnement

La compagnie peut présenter des programmes d'orientation afin d'aider la collectivité à être davantage sensibilisée au projet de développement et à ses répercussions néfastes possibles sur l'environnement.

La compagnie peut assurer la protection des sites archéologique ou du patrimoine.

La compagnie , conjointement avec le gouvernement, peut établir un système de consultation concernant les demandes de licence et

de permis à l'exploitation des ressources dans les collectivités locales.

La compagnie doit se conformer à toutes les exigences des gouvernements fédéral et provincial ou territorial en matière d'environnement. La compagnie peut mettre en oeuvre des programmes de contrôle et de mise en application des lois environnementales. La compagnie peut faire participer la population locale aux activités de surveillance des politiques environnementales.

La compagnie peut considérer l'impact environnemental de projet initier par l'exploitation des ressources. La compagnie peut assurer l'observation des lois environnementales territoriales/provinciales et fédérales.

La compagnie peut reconnaître l'existence d'une faune spéciale dans la région locale et la possibilité que les modes de migration traditionnels soient dérangés. La compagnie peut assurer que les mesures de protection vont être prises afin de réduire au minimum le dérangement des régions fauniques.

6. MISE EN OEUVRE ET COORDINATION DE L'ACCORD

a) Comité de gestion de la coordination

La compagnie, en collaboration avec le gouvernement provincial ou territorial, peut former un comité chargé de contrôler la mise en oeuvre et l'observance de l'accord. Le comité serait tenu de fournir les informations socio-économiques, environnementales et autres aux parties intéressées. Le comité va servir également de véhicule pour régler les différends qui pouvaient survenir à la suite du développement.

b) Agent de liaison

La compagnie peut embaucher un agent de liaison qui fait fonction de personne-ressource entre la collectivité, la compagnie et les divers comités. L'agent de liaison est responsable de la mise en oeuvre et de la gestion générales des politiques et des programmes de l'accord ayant rapport à la collectivité locale.

c) Évaluation de l'accord

Les représentants des parties en cause peuvent exiger une évaluation périodique de l'efficacité, du respect et de la satisfaction de l'accord. Les dispositions de l'accord sont modifiées ou changées seulement avec le consentement unanime de toutes les parties.

Les représentants des parties en cause peuvent permettre une évaluation indépendante du rendement des politiques et des programmes instaurés par suite de l'accord.

d) Durée de l'accord

L'accord devra commencer à la date d'entrée en vigueur et devra continuer pour une période de "x" mois/année. La prorogation ou la résiliation de l'accord ou des projets qui y sont mentionnés ne peuvent se faire qu'avec l'accord unanime de toutes les parties. Les projets planifier ou mis en oeuvre selon l'accord ne peuvent être prolonger après la résiliation de l'accord qu'avec le consentement unanime de toutes les parties.

7. FINANCEMENT DES INITIATIVES DE L'ACCORD

Des ententes ont parfois été négociées avec des organismes fédéraux et provinciaux ou territoriaux pour ce qui a trait au financement d'initiatives particulières. L'aide obtenue des programmes existants est généralement limitée par la disponibilité des fonds. Les compagnies fournissent en général la plus grande part du financement pour la mise en oeuvre de l'accord.

8. AUTRES CLAUSES

a) Droits ancestraux, droits issus de traités et droits constitutionnels

La compagnie peut assurer que tous les droits, privilèges et libertés des autochtones, qu'ils aient été établis avant ou après la signature du présent accord, ont préséance sur l'accord socio-économique.

b) Conventions collectives (syndicats)

Lorsqu'une compagnie conclue une convention collective avec un syndicat après la signature d'un accord socio-économique, la convention collective ne doit pas entrer en conflit avec les obligations de l'accord socio-économique. Ceci dit, certains accords socio-économiques mentionnent qu'en cas de conflit, les clauses de la convention collective prévalent. La compagnie peut entreprendre des efforts afin d'assurer que la convention collective ne supprime, réduise ou intervienne aux obligations de l'accord socio-économique.

ADDENDA A

ÉLÉMENTS PARTICULIERS PROPRES À UNE PROVINCE OU À UN TERRITOIRE DÉTERMINÉS À PARTIR DES ACCORDS DISPONIBLES

ALBERTA

En Alberta, les accords disponibles indiquent que la compagnie, le gouvernement fédéral (représenté par le ministère des Affaires indiennes et du Nord canadien et le ministère de l'Emploi et de l'Immigration), la province (représentée par le ministre des Affaires municipales) et les organismes autochtones locaux signent les accords socio-économiques.

SASKATCHEWAN

Dans le nord de la Saskatchewan, tous les baux relatifs aux minéraux de surface exigent que les compagnies acceptent de préparer et de présenter au gouvernement de la Saskatchewan des prévisions annuelles des débouchés économiques pour les entrepreneurs nordiques et les fournisseurs nordiques de biens et de services. Le locataire accepte également de conclure un accord de perfectionnement des ressources humaines avec la Saskatchewan Education, qui établit des lignes directrices et des principes afin de maximiser les possibilités d'emploi et de formation pour les nordiques. Dans le cadre de cet accord de perfectionnement des ressources humaines, les compagnies acceptent également de présenter des plans annuels des ressources humaines indiquant leurs méthodes de recrutement, de formation et d'emploi ainsi que les compétences requises et les besoins en main-d'oeuvre présents et à venir et de présenter les statistiques d'emploi chaque trimestre.

MANITOBA

Le Manitoba a élaboré une entente auxiliaire Canada-Manitoba sur le développement du Nord qui met en oeuvre les programmes de développement économique et socio-économique du Manitoba. L'entente vise à accroître la participation des résidents nordiques au développement économique tout en aidant au maintien de leurs modes de vie traditionnels. Les initiatives sont axées sur le développement économique communautaire, le perfectionnement des ressources humaines et l'amélioration de la vie communautaire. L'entente porte également sur la participation des résidents nordiques aux emplois locaux, en particulier dans les grands secteurs d'exploitation des

ressources. L'entente est validée et administrée par le comité consultatif de l'entente qui est nommé par le comité des ministres de l'entente sur le développement du Nord. Le financement de cet accord est partagé entre le Canada et la province.

ONTARIO

En Ontario, les accords indiquent que la compagnie, la province, le Canada et les organismes autochtones locaux signent les accords socio-économiques. Le principal négociateur pour les accords socio-économiques pour l'Ontario a été Alan Grant, qui a participé à la négociation de deux ententes globales récentes.

TERRITOIRES DU NORD-OUEST

Dans les Territoires du Nord-Ouest, les accords indiquent que les signataires des accords socio-économiques sont soit la compagnie et le gouvernement territorial ou fédéral ou la compagnie et l'organisme autochtone local.

ANNEXE E

ÉTUDES DE CAS

ANNEXE E

ÉTUDES DE CAS

LE CENTRE DE FORMATION TAHLTAN

1. INTRODUCTION

Depuis le milieu des années 1980, le nord-ouest de la Colombie-Britannique fait l'objet d'une intense exploration minérale; les résultats se sont révélés probants, et ont donné lieu à la création de deux mines de métaux précieux : Golden Bear, en 1989, et Snip en 1991. Une troisième mine d'or, Eskay Creek, en est à l'étape de mise en oeuvre. De plus, plusieurs entreprises poursuivent leurs prospections dans la région.

Cette région abrite aussi la patrie traditionnelle des Tahltans, comme en témoignent leurs collectivités à Dease Lake, Telegraph Creek et Iskut. Les Tahltans ont gagné leur pain, pendant des centaines d'années, en assurant le transit des biens entre la côte du Pacifique et l'intérieur des terres. Depuis quelques années, ils ont pris conscience, tandis que les explorations sur leurs territoires se multiplient, que leur vie serait bouleversée si l'on découvrait des gisements de minerais qui se prêteraient à l'exploitation. Ils ont également compris que cela donnerait lieu à une activité commerciale intense, et se sont jurés d'y participer activement.

Les Tahltans se fixent essentiellement pour but, à l'égard du développement économique, d'y participer activement; ils ont compris que cela exige qu'ils changent leur mode de vie traditionnel.

Le Conseil tribal tahltan (TTC), voulant se préparer à participer à l'exploitation imminente, a donc ordonné une étude[6] cernant, entre autres, les occasions d'emploi et possibilités économiques, ainsi que la formation précise et les compétences en matière commerciale qui permettraient de tirer parti de ces possibilités. L'étude a mis l'accent sur les possibilités qu'offre l'exploitation minière dans la région, mais ne se borne pas toutefois à ce seul type de mise en valeur des ressources.

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[6] Naas, O.O., Employment and Business Opportunities Related to Mining and Other Economic Developments in the Region, rédigé pour le compte du Conseil tribal tahltan, Dease Lake, C.-B., mars 1991. Le présent rapport se fonde sur le document ci-dessus, ainsi que sur des entrevues téléphoniques avec Bettina Atley, directrice des programmes du Centre de formation des Tahltans.

2. PARTICIPATION DES TAHLTANS À L'EXPLOITATION MINIÈRE

La participation des Tahltans à l'exploitation minière locale remonte à loin, sans exclure les deux mines qui sont déjà en exploitation. Cette participation a fait figure d'exemple parfait dans le rapport de l'Étape I sur la Native Participation in Mining (participation des autochtones à l'exploitation minière) décrivant la mine de Golden Bear. En effet, cette participation ne s'est pas bornée à des emplois directs : la Tahltan Nation Development Corporation (TNDC) a négocié plusieurs contrats à la mine de Golden Bear. Ces contrats ne représentent pour eux qu'un échantillon de ce qu'ils souhaitent obtenir, et de leur capacité à cet égard.

De plus, le TTC s'occupe depuis des années, par l'intermédiaire de ses bureaux de Dease Lake, de la formation professionnelle, notamment dans le domaine de la construction; ces compétences sont bien adaptées à l'industrie minière.

Le TTC avait confié à l'expert-conseil la mission de déterminer les occasions que présente l'activité minérale récente, ainsi que les façons d'en tirer parti.

3. CONCLUSIONS DU RAPPORT DE L'EXPERT-CONSEIL

L'expert-conseil, dans son rapport, a analysé la main-d'oeuvre (ceux qui cherchent un emploi aussi bien que ceux qui en ont), et les entreprises déjà exploitées par les Tahltans. On a pris note des occasions possibles d'emploi et d'affaires en matière d'exploitation minière, ce qui englobe la construction de voies menant aux mines à Snip et à Eskay Creek, ainsi qu'à la mine et à l'usine à ce dernier lieu. Le rapport dresse une longue liste des services dont les entreprises minières ont généralement besoin (Appendice A, p. 71).

Le rapport met aussi l'accent sur l'aspect social, qui complique à tel point l'auto-perfectionnement, mais qui est néanmoins si important. Il signale que malgré leur participation actuelle à l'exploitation minière, les Tahltans n'ont encore que peu d'attaches avec le développement industriel; il en résulte que les jeunes de cette nation ne peuvent prendre exemple sur personne pour pénétrer dans le monde industriel. L'absence d'une éducation scolaire (la plupart des Tahltans ne finissent pas l'école secondaire) complique la situation et constitue un obstacle réel à la participation de la bande à la mise ne valeur industrielle de la région. Le rapport en conclut qu'il faut procéder à une formation avant l'emploi, ou à une orientation, et que les Tahltans sont eux-mêmes les mieux placés pour assurer cette formation.

4. CENTRE DE FORMATION DES TAHLTANS

Le TTC a souscrit à l'idée d'un Centre de formation; celui-ci a ouvert ses portes en février 1991. Dirigé par les Tahltans, il dessert néanmoins non seulement cette nation, mais tous les résidents du nord-ouest de la C.-B.

L'ouverture de ce Centre a bénéficié de l'appui des entreprises minières locales, dont trois ont contribué à l'achat de matériel de bureau.

Situé dans la réserve n° 9, à environ 6 km de la collectivité de Dease Lake, le Centre peut héberger en permanence jusqu'à 20 élèves provenant d'ailleurs que cette collectivité. En outre, les frais de transport sont le plus souvent défrayés par le programme donné au Centre. Bien qu'il s'agisse d'une nouvelle entreprise, le Centre n'a pu bénéficier de nouveaux édifices; il en résulte que la place fait défaut. La salle à manger fait office de salle de classe, de bureau administratif et de salle de conférence. Il faudrait y adjoindre au moins deux salles de classe, de même qu'une garderie de jour.

Le Centre fixe des objectifs ambitieux, à lui-même tout autant qu'aux élèves. Une bonne partie du programme d'études consiste à renouveler la formation sur des compétences précises, en vue d'obtenir des emplois. Son but est de remonter le niveau des élèves à la 12^{e} année, ce qu'on estime nécessaire pour obtenir de l'avancement aux divers échelons d'une mine et d'une usine.

Le rapport signalait que le milieu social fait obstacle à l'emploi en milieu industriel : le Centre offre donc des cours sur les compétences sociales requises pour l'emploi. Des cours «transculturels» enseigneront comment l'on vit dans les camps miniers, où le mode de vie est très différent de celui dans la réserve. Les cours porteront sur le comportement général et sur les concepts sociaux qui ont cours dans un camp.

Le Centre compte aussi donner beaucoup des cours techniques qui répondent aux besoins des employeurs locaux. Cela inclut la mécanique des engins lourds, la conduite de camions (classe 1), la plomberie, l'électricité, le forage au diamant, le fonctionnement des machines et l'administration de bureau. Une formation sera également assurée sur le service aux entreprises minières, par exemple sur ce qui suit : soins d'urgence, sécurité, services de traiteur, réparation et entretien du matériel, entreposage.

On invitera les mines locales à organiser des séminaires sur l'exploitation minière, tandis qu'on demandera aux fournisseurs et grossistes à fournir des instructeurs en vue d'enseigner comment il convient de manier leurs produits. Le Centre collaborera en outre avec le ministère de l'Éducation et avec

d'autres organismes à l'organisation de cours sur les compétences commerciales qui font défaut aux Tahltans. Les programmes indiqués portent entre autres sur l'administration et la gestion, et comportent des cours de comportement humain et social destinés aux futurs superviseurs.

Le Centre n'a ouvert ses portes qu'en février 1991, mais les premiers diplômés en sortiront dès août 1991. Néanmoins, les entreprises locales offrent déjà des emplois aux élèves du Centre. L'appui dont il jouit de la part du Conseil tribal Tahltan, allié à l'intérêt que manifestent les entreprises minières locales, augurent bien pour son avenir.

APPENDICE A

Types de services qu'exige généralement l'exploitation minière

1.0 Fabrication

Boîtes à noyaux, y compris étagères d'entreposage;
échelles de bois;
palettes;
cales de bois;
jalons d'arpentage;
coffres;
étagères et casiers divers;
casiers pour le matériel et les outils;
échelles en acier;
crochets à conduits;
crochets en J;
haut-parleurs;
remises diverses;
petites modifications continuelles.

2.0 Transports

Transport de carburant et de lubrifiants;
transports généraux;
maniement des produits concentrés;
petit service d'autobus jusqu'à l'aérodrome et les lieux d'assemblage locaux.

3.0 Fournitures

Services alimentaires;
pâtisseries;
bois d'oeuvre carré;
garnitures rondes;
bois de construction;
contre-plaqué;
quincaillerie, y compris tuyaux en plastique et garnitures;
clôtures en acier;
tuyaux en acier;
matériel de soudage;
attaches;
boyaux;
matériel divers pour l'atelier.

4.0 Autres services

Entretien des routes, y compris déneigement;
service de pompage des résidus;
dispositifs portatifs de nettoyage sous pression;
service d'entretien et de réparation des camps, y compris peinture;
location de véhicules, y compris de véhicules légers.

PROGRAMMES DE FORMATION DANS LE NORD DE LA SASKATCHEWAN

1. INTRODUCTION

Il est stipulé, dans les baux de surface de toute exploitation minière dans le nord de la Saskatchewan, qu'on essaiera d'engager autant que possible les résidents des collectivités et réserves dans cette région. Pour y parvenir, le gouvernement de la Saskatchewan, de concert avec le gouvernement fédéral et les mines, ont organisé divers programmes de formation.

La moitié nord de la Saskatchewan a une population de 30 000 personnes, soit trente-sept collectivités abritant 20 000 personnes en tout, et douze bandes indiennes dont la population, dans les réserves, se chiffre à 10 000 personnes. Les trois quarts environ de cette population sont d'ascendance autochtone.

Les mines d'or et d'uranium en exploitation, de même que les projets envisagés, sont situés à l'écart, de sorte qu'on y va (et qu'on en revient) en avion ou en véhicule. Les lieux de ramassage aériens et routiers sont situés de façon que des membres de beaucoup de collectivités pourraient éventuellement travailler dans les mines; toutefois, la main-d'oeuvre ne possède pas, pour la plupart, les compétences et connaissances dont l'industrie a besoin. Le secret d'une participation accrue des résidents de la région, c'est la formation.

Les programmes de formation sont essentiellement de deux sortes : ceux offerts dans les mines par les employeurs, et ceux dispensés par les instituts éducationnels, essentiellement le collège Northlands; ce dernier, situé à La Ronge, occupe des bureaux importants à Buffalo Narrows et à Creighton, assure la formation dans ses propres installations, ou, souvent, dispense les programmes offerts par l'institut des sciences appliquées et de la technologie de la Saskatchewan (SIAST). Les programmes miniers sont souvent financés en collaboration par les gouvernements fédéral et provincial, et par l'employeur.

Depuis 1985, le pourcentage de résidents employés dans ces mines est passé de 32 % à près de 40 %, tandis que beaucoup plus d'autochtones occupent des postes techniques et de supervision. Presque tous les résidents ayant suivi des programmes de formation dans l'industrie des mines et de l'exploration minière ont obtenu un emploi. Selon l'industrie, la plupart des employés restent à leur emploi : 85 % des stagiaires sont encore engagés dans l'industrie au bout de 2 ans. Ce succès est attribuable à plusieurs facteurs, dont un esprit de collaboration, une formation locale mettant l'accent sur la réduction des tensions occasionnées par les déchirements géographiques et sociaux, une formation en collaboration «sur le tas», une certaine souplesse, et des engagements officiels.

Plusieurs organismes gouvernementaux ou de formation, entreprises minières et groupes communautaires collaborent étroitement à la détermination des besoins en formation, en vue d'améliorer les possibilités d'emploi des résidents de cette région dans les mines. Des comités de liaison s'efforcent de maximiser l'emploi local; grâce à ces comités, les collectivités peuvent s'exprimer sur le succès de la formation et sur leur capacité de contribuer des stagiaires, prendre connaissance des ouvertures et des nouveaux programmes de formation, et parfois désigner des installations dans leurs villages qui conviendraient à la formation. Les entreprises annoncent les ouvertures et les occasions qui vont s'offrir, puis proposent des nouveaux programmes et des modifications aux programmes actuels, en fonction de leur expérience. Les organismes de formation élaborent de nouveaux programmes, ou modifient les anciens, en fonction des besoins des compagnies minières et des collectivités.

2. COMITÉS DE LIAISON

L'**Équipe de projet** d'Athabasca fournit un exemple d'un comité de liaison composé de représentants de tous les paliers du gouvernement, des bandes indiennes locales et de l'industrie minière. Constituée en vue de pourvoir aux centaines de nouveaux postes qui s'ouvriront d'ici à cinq ans dans l'industrie minière de la région de l'Athabasca, l'Équipe est chargée de veiller à ce que les habitants de cette région profitent davantage des possibilités économiques et des occasions d'emploi qu'offre l'industrie minière de la région. L'un des plans envisagés consiste à créer, à Wollaston Lake, un centre de stages qui accommoderait divers cours de formation sur les mines. Un autre plan établi en vue d'augmenter le nombre d'installations post-secondaires dans d'autres collectivités de l'Athabasca consisterait à ménager de la place pour des classes vocationnelles dans les nouveaux établissements scolaires.

Le **Northern Labour Market Committee** (Comité sur le marché du travail dans le Nord) se compose de représentants d'organismes de prestation des programmes, des gouvernements, de conseils tribaux, et d'organismes non gouvernementaux et du secteur privé. Le Comité invite l'industrie minière à lui faire des présentations, puis se fonde sur elles, et sur des consultations permanentes, pour contribuer utilement à la préparation de programmes de formation par le ministère de l'Éducation de la Saskatchewan; ce dernier rédigeait un rapport en avril 1991, intitulé Profil de planification économique pour le nord de la Saskatchewan, décrivant le profil démographique et économique du nord de la province, puis s'en inspirait pour déterminer les besoins en formation du secteur minier aussi bien que d'autres secteurs. Selon ses recommandations, on aurait besoin d'une formation pour les ouvriers miniers, les opérateurs sur machine

et les emplois susceptibles d'un apprentissage. Les consultations menées par le Comité et par autres se sont révélées d'importance cruciale pour déterminer les besoins en formation.

Le **Northern Mining Co-ordinator's Committee** (comité des coordonnateurs des mines dans le Nord), moins officiel, est néanmoins une très utile tribune d'employés des diverses entreprises d'exploration et d'exploitation minières, et d'organismes gouvernementaux, ou basés dans la collectivité. Les réunions trimestrielles se prêtent à des discussions périodiques des diverses initiatives, succès et problèmes dans les domaines de l'emploi, de la formation et des possibilités économiques chez les résidents locaux et les autochtones. Une discussion ouverte et constructive des programmes d'embauche, des possibilités économiques, de la consultation communautaire et des systèmes de prestation de programmes entraîne une amélioration de la formation, et la création d'autres emplois dans le nord de la province.

3. FORMATION LOCALE SUR LE COMPORTEMENT DE BASE ET SUR LES TRANSITIONS

L'accent est également mis sur un autre domaine : la formation sur le comportement de base, qui précède la formation avancée donnée plus au sud ou l'emploi dans les mines. Les **programmes de pré-emploi dans les mines et usines** sont dispensés depuis quelques années au collège Northlands, à Buffalo Narrows, et obtiennent beaucoup de succès. On garantit aux stagiaires reçus au programme, qui est organisé en collaboration, un emploi à la mine Key Lake de Cameco; là, le programme s'est révélé un tel succès qu'on en a organisé un semblable à Rabbit Lake. Le programme fait figure de modèle pour l'embauche à des emplois de base; ceux qui l'ont suivi manifestent de l'ambition, veulent poursuivre leur éducation et ne quittent que rarement leur emploi dans les mines.

Les **programmes destinés aux auxiliaires dans les mines souterraines** sont donnés dans les mines mêmes de Hudson Bay Mining and Smelting par le collège Northlands. Ce programme réussi est le fruit d'une collaboration étroite entre l'industrie minière et SIAST. La formation en classe aussi bien que l'expérience pratique assurées aux 48 stagiaires ont lieu sous terre; si des emplois s'offrent, des représentants des mines et des entrepreneurs miniers ont une entrevue avec les stagiaires. L'industrie déclare qu'il faut élargir ce programme en priorité, afin de pourvoir dès aujourd'hui aux programmes projetés, qui en sont à des stades divers d'examen environnemental.

Grâce à la **formation transitionnelle**, une proportion accrue de résidents locaux sont admis comme stagiaires et atteignent au rang d'ouvrier qualifié, car on élimine beaucoup des obstacles

qui se dressaient autrefois sur leur route. Avant que soit organisé ce programme, le nombre de stagiaires provenant du nord de la Saskatchewan était très faible, et plus faible encore le nombre d'ouvriers qualifiés. Des pourparlers entre le ministère de l'éducation de la Saskatchewan et Eldor Resources, en 1984, ont entraîné la création du premier Programme de formation transitionnel dans le Nord.

L'un des buts importants que vise ce programme est de réduire la tension qu'engendre l'acclimatement aux bouleversements géographiques ou culturels; la formation des intéressés se compose d'une «transition», à la fois géographique et sociale, depuis les milieux écartés jusqu'à la ville. La promotion à des niveaux divers du stage répond aux progrès réalisés par les stagiaires au cours du programme. Une autre caractéristique du modèle, c'est l'accent mis sur l'éducation scolaire avant la formation vocationnelle, puis en même temps qu'elle. Dans la même optique, on assure une orientation permanente et personnelle, en vue de cerner les problèmes scolaires, sociaux, financiers ou familiaux qui risquent de se répercuter sur le programme de formation.

Le modèle est illustré par le programme élaboré en collaboration par Eldor Resources et le ministère de l'Éducation de la Saskatchewan, aux termes duquel huit résidents de la région de l'Athabasca ont été mis en apprentissage et ont reçu une formation. On jugera du succès du programme si l'on observe que 7 des 8 ont atteint au rang d'ouvrier qualifié. Le programme se poursuit.

4. FORMATION EN COLLABORATION

L'**Athabasca Innovations Project** (projet innovateur d'Athabasca) est un autre projet qui met l'accent sur la formation locale. Programme alliant la formation, l'expérience pratique et l'éducation scolaire par une collaboration entre les gouvernements, les organismes de formation, l'industrie et les groupes communautaires dans le grand nord de la Saskatchewan, il a placé ses premiers diplômés dans des mines et usines au printemps de 1991. On compte que, dès 1992, jusqu'à 45 résidents de l'Athabasca en sortiront avec leur diplôme. Pour la plupart, les stagiaires avaient au début une éducation scolaire et une expérience des plus sommaires.

La **formation en collaboration sur place** dans l'industrie aurifère fournit un autre exemple d'un mariage de l'esprit de collaboration et d'une formation locale. Les compagnies aurifères ont formé en collaboration des résidents de sorte qu'ils puissent sans difficulté se mettre au travail dans de nouvelles installations autres que les mines. Une formation initiale a été donnée jusqu'à présent à la mine Cameco de Star

Lake (aujourd'hui fermée), en vue d'un poste aux installations de Corona à Jolu, tandis qu'une formation donnée à Jolu permettait aux intéressés de travailler aux installations de Cameco à Jasper. Cette formation en collaboration sera désormais intégrée à l'exploitation minière dans cette région.

5. SOUPLESSE

La capacité de consacrer assez rapidement des ressources aux besoins précis de l'industrie entraîne également une amélioration de la formation dans le nord. Le laboratoire polyvalent à La Ronge abrite un **programme destinés aux techniciens des laboratoires chimiques**; offert depuis quelques années, le programme a bénéficié d'une collaboration étroite entre l'industrie minière et SIAST dès qu'on en a ressenti la nécessité. Tous les diplômés de ce programme d'études et de travail seront embauchés dans les laboratoires des exploitations minières, outre qu'ils auront les compétences voulues pour obtenir des emplois techniques variés dans des laboratoires. L'industrie a besoin de techniciens en chimie, d'essayeurs et de techniciens en environnement; elle tient à engager des employés locaux pour surveiller les répercussions environnementales de l'exploitation minière, car sa crédibilité grandit parmi les collectivités locales si des employés locaux témoignent de la rigueur des règlements environnementaux et du respect avec laquelle l'industrie s'y plie.

6. EXIGENCES DU GOUVERNEMENT DE LA SASKATCHEWAN

Outre cet esprit de collaboration, la formation locale, la créativité et la souplesse, des ententes formelles visant à tirer tout le profit des ressources ont sensibilisé tant les employeurs que les collectivités locales. Toute entreprise minière implantée dans le nord de la province est tenue, aux termes de son Bail de surface, à négocier avec le ministère de l'Éducation de la Saskatchewan une entente de perfectionnement des ressources humaines. L'essentiel, dans ces ententes, c'est que l'employeur s'engage, autant que possible, à embaucher autant de résidents locaux que possible, à les former et à assurer leur avancement, à tous les échelons de l'exploitation. Aux termes de telles ententes, le ministère de l'Éducation de la Saskatchewan assure des programmes de formation des compétences axés sur les besoins des entreprises et conçus pour les résidents; se basant sur ces ententes, le Ministère coordonne les besoins en formation des employeurs dans l'industrie minière avec l'élaboration et la prestation de programmes.

7. EMPLOIS D'ÉTÉ

Les programmes d'emploi d'été dans les écoles secondaires est une autre des façons dont les compagnies minières trouvent des employés possibles dans les collectivités du nord de la province. Cet été, Cameco engage 32 élèves qui travailleront chacun 154 heures dans des mines. Le programme permet de trouver des postulants possibles pour des emplois à temps plein ultérieurs; en outre, les élèves y acquièrent une expérience de l'industrie, ainsi qu'une connaissance plus approfondie de son fonctionnement.

8. PROGRAMMES DE BOURSES ET D'AIDE AUX ÉTUDIANTS

L'industrie a beaucoup contribué à des bourses et programmes d'aide aux étudiants. Les deux entreprises d'exploitation de l'uranium, Cameco et Amok Ltd., ont consacré 40 000 $ en 1990 aux bourses, et comptent y consacrer 50 000 $ en 1991. De même, Hudson Bay Mining and Smelting offre des bourses considérables. D'autres programmes offerts par l'industrie décernent des bourses pour les notes obtenues de la septième à la douzième années.

9. CONCLUSION

Pour conclure, quiconque veut exploiter une nouvelle mine dans le nord de la Saskatchewan peut contribuer à l'emploi en faisant part de ses besoins, dans les plus brefs délais, au ministère de l'Éducation de la Saskatchewan, au Centre d'emploi du Canada, au collège Northlands, aux collectivités de la région et au programme NorSask Native Outreach. Le Ministère s'efforcera d'ajuster la formation aux besoins des entreprises, au moyen de négociations sur l'entente de perfectionnement des ressources humaines. Les entreprises minières doivent continuer à offrir aux collectivités beaucoup d'occasions de poser des questions sur l'emploi, et sur les autres questions relatives aux mines, ainsi que d'en discuter et de formuler des observations.

AGENCE DE FORMATION ET D'EMPLOI À LIMESTONE (MANITOBA)

1. INTRODUCTION

En 1985 était mis en chantier l'immense projet hydro-électrique à Limestone (Manitoba), sur le fleuve Nelson, à 750 km au nord de Winnipeg. Le projet Limestone, qui coûte environ 1,5 milliards de dollars, est la cinquième (et la plus puissante, avec ses 1 280 MW de capacité nette) centrale hydro-électrique installée sur le fleuve Nelson, dont le bassin hydrographique occupe plus d'un million de milles carrés, et dont le potentiel est deux fois celui du réseau du Niagara. La première des 10 génératrices entrait en fonction en novembre 1990; le projet doit être mené à bien en 1992.

2. AGENCE DE FORMATION ET D'EMPLOI DE LIMESTONE

Le projet hydro-électrique de Limestone fournissait l'occasion de lancer un programme de développement économique qui profiterait à tous les résidents du Manitoba, notamment à ceux de la région nordique. Établie en 1984, la Limestone Training and Employment Agency (Agence de formation et d'emploi de Limestone, LTEA), partie intégrante de cette initiative, a été le plus important programme de formation à accompagner un programme de construction au Canada. La LTEA a contribué à augmenter de beaucoup le niveau d'emploi des autochtones, tout en améliorant les compétences de la main-d'oeuvre.

L'entente collective Nelson-Burntwood (NBA) et l'entente Canada-Manitoba sur le projet de Limestone ont servi de cadre pour la prestation de meilleurs services de formation et d'emploi pour les résidents du nord du Manitoba. La NBA avait fixé des objectifs d'action positive pour les emplois exigeant une grande compétence; la LTEA a constitué la réponse à cette exigence. Toutefois, ces objectifs se révélèrent quelque peu irréalistes à la lumière de l'absence d'apprentis dans cette région avant le projet Limestone, et du temps qu'il faut pour atteindre au statut d'ouvrier qualifié dans un métier.

La LTEA a été fondée rapidement, et a bénéficié du soutien entier du Cabinet. On a adopté une bonne stratégie de communication pour promouvoir la LTEA; rétrospectivement, toutefois, on aurait peut-être pu consulter plus longuement les groupes autochtones de la région.

L'inscription de plus de 5 000 résidents locaux à des séances d'emploi et de formation s'est révélée l'une des réalisations les plus réussies de Limestone sur le plan des relations publiques;

mais ce succès a mené les résidents à croire qu'une formation par la LTEA mènerait directement à un emploi à la centrale hydro-électrique.

3. OBJECTIF

La LTEA avait pour objectif de coordonner la formation, et au besoin de la donner, de manière à répondre aux besoins du projet Limestone et à l'expansion du secteur privé auquel il avait donné lieu. Les institutions éducationnelles établies ne disposent pas des ressources voulues pour former un nombre suffisant de résidents nordiques, notamment autochtones. Pour y établir une main-d'oeuvre compétente, il faut des initiatives spéciales assorties d'une embauche active et de stratégies de formation innovatrices.

4. RÉSULTATS

En conséquence de la LTEA, la main-d'oeuvre de la région, qui ne comptait pratiquement aucune personne compétente en 1984, en comptait en 1990 plus de 1 000, inscrites à des métiers susceptibles d'un apprentissage. La LTEA et la Direction générale de l'apprentissage ont facilité le transfert au système d'apprentissage, qui a entraîné la participation réussie des autochtones. La LTEA, confrontée à un échéancier très serré - former des ouvriers qualifiés en quatre ans, à temps pour trouver un emploi à Limestone - a créé un «vivier» d'apprentis dans le nord de la province; cela est indispensable pour qu'on y dispose de suffisamment d'ouvriers qualifiés pour les futurs projets hydro-électrique ou autres dans le Manitoba.

La LTEA s'est avérée une méthode rentable de formation des résidents locaux en vue du travail sur le projet hydro-électrique. Une évaluation des frais de formation à la LTEA, menée par le centre de recherches de Churchill, a montré qu'ils étaient comparables à ceux d'autres programmes offerts dans la région. Si l'on tient compte des frais d'action positive, des longues journées consacrées à une formation par simulation, et des frais de création de la LTEA, les programmes de celle-ci se sont révélés à peu près aussi coûteux que ceux du collège communautaire Keewatin (KCC).

Il était d'importance critique d'assurer des services de soutien pour la formation et l'emploi, afin de réduire le nombre de départs de stagiaires et de travailleurs; ce soutien a largement réussi à assurer une transition sans heurts entre la vie dans une collectivité nordique et le travail sur un gros chantier.

Aux termes de l'entente Canada-Manitoba, il appartenait à la CEIC de référer les gens au chantier hydro-électrique. Le système de

référence de la CEIC a connu des difficultés, tandis que le gouvernement fédéral réduisait la contribution qu'il offrait aux termes de l'entente.

Le projet, comme tout autre de cette nature et ampleur, s'est heurté à des difficultés de taille, qu'il a fallu surmonter. Le succès doit se mesurer à la lumière des conditions dans cette région avant le projet Limestone, et de l'incapacité des institutions établies à préparer les résidents à travailler sur de gros chantiers.

5. RÉSUMÉ

Pour résumer, la LTEA a éveillé un ferment éducationnel sans précédent dans l'histoire du nord du Manitoba. Ce faisant, on a cerné bon nombre des complications qui ont contribué aux difficultés qui confrontent les programmes d'éducation généraux, et les initiatives de création d'emplois, et l'on a pu remédier à beaucoup d'entre elles. Vu l'énormité de la tâche qui la confrontait, la LTEA s'en est très bien tirée; grâce à elle, le nord de la province dispose de beaucoup plus d'ouvriers qualifiés pour les initiatives à venir, par exemple le projet hydro-électrique Conawapa, ou les autres projets d'expansion industrielle.

Condensé de Limestone Training and Employment Retrospective Report, par le groupe d'étude Conawapa sur l'éducation et la formation, janvier 1991

ENTENTE CANADA-MANITOBA DE DÉVELOPPEMENT ÉCONOMIQUE

1. INTRODUCTION

L'Entente Canada-Manitoba de développement économique (NDA), en vigueur de 1982 à 1989, faisait suite aux ententes antérieures sur les terres septentrionales, établies de 1974 à 1976, et de 1976 à 1982. Administrée par le ministère fédéral d'Expansion industrielle régionale (EIR), et le ministère provincial des Affaires du Nord, la NDA visait expressément les buts suivants : augmentation des occasions locales de revenus et d'emplois dans le nord du Manitoba; participation accrue de la main-d'oeuvre locale aux occasions d'emploi; participation plus active des particuliers à la mise en valeur de la région nordique, grâce à l'élimination des obstacles physiques au perfectionnement des ressources humaines et à l'expansion économique.

On constitua un Comité consultatif du programme, représentant les organismes autochtones et gouvernementaux, afin d'examiner tout projet proposé et de formuler des recommandations. Le gouvernement fédéral devait contribuer à la NDA un maximum de 173,15 millions de dollars, et le gouvernement provincial 88,4 millions de dollars. La NDA englobait trois secteurs principaux : A) Développement économique communautaire (71,8 millions de dollars); B) Perfectionnement des ressources humaines (144,2 millions de dollars); C) Amélioration des communautés (38,4 millions de dollars). La restant des fonds affectés au programme (soit 7,2 millions de dollars) ont été consacrés à l'information du public, à la gestion, à l'administration et aux consultations menées par la NDA.

2. SECTEUR A : DÉVELOPPEMENT ÉCONOMIQUE COMMUNAUTAIRE

Le secteur A regroupait 5 programmes principaux : Planification économique communautaire et régionale, qui déterminait et amplifiait les nouvelles possibilités d'emplois; Promotion des occasions qu'offrent les ressources, qui stimulait les mises en valeur locales et y réagissait, notamment en ce qui concerne l'utilisation des ressources locales et régionales; Développement du nord-est du Manitoba, qui mettait en oeuvre des mesures spéciales axées sur les facteurs socio-économiques particuliers à cette région; Mise en valeur des ressources, qui appuyait toute mise en valeur des ressources septentrionales, par exemple les forêts et parcs, la faune et l'agriculture; et Expansion du gouvernement local, chargée de fournir des informations, une formation et une aide connexe aux gouvernements locaux.

3. SECTEUR B : PERFECTIONNEMENT DES RESSOURCES HUMAINES

Le secteur B (Perfectionnement des ressources humaines) comptait 6 programmes : Carrières Canada, qui formait les résidents autochtones en vue de postes techniques à la Fonction publique; Programmes et services d'Emploi Canada, qui assurait des services de main-d'oeuvre en vue de faire participer davantage les résidents de la région aux occasions de mise en valeur; Perfectionnement professionnel des Indiens, qui aidait les Indiens inscrits à bénéficier d'une éducation post-secondaire; Action positive dans le nord du Manitoba, chargée d'accroître la participation des résidents, notamment les autochtones, à l'égard des occasions techniques et professionnelles à base de ressources; Services de déménagement et de soutien, qui facilitait les déménagements et appuyait l'emploi; et Perfectionnement de la jeunesse, pour donner l'occasion aux jeunes de se préparer aux emplois.

4. SECTEUR C : AMÉLIORATION DES COMMUNAUTÉS

Le secteur C (Amélioration des communautés) comptait trois programmes : Services aux collectivités indiennes du Nord, qui assurait des services essentiels (routes, eau potable, gestion des déchets, protection contre les incendies et travaux publics); Services aux collectivités du nord de la province, qui assurait les services décrits ci-dessus aux collectivités relevant du ministère manitobain des Affaires du Nord; et Aérodromes éloignés, qui construisait et améliorait des pistes d'envol, avec les installations connexes, près des collectivités éloignées qui ne disposaient d'aucune autre forme de transport.

MAI 1991

NOUVEAUX DÉVELOPPEMENTS EN ONTARIO, EN 1991

ENTENTE SUR LES MESURES PROVISOIRES - NATION NISHNAWBE-ASKI

1. CONTEXTE

En 1986, les gouvernements du Canada et de l'Ontario signaient avec la nation nishnawbe-aski (NN-A) un protocole d'entente visant à ce que la NN-A exerce des pouvoirs accrus en matière de décisions ayant trait à leurs conditions de vie. Le gouvernement fédéral et le gouvernement ontarien reconnaissent que la population autochtone devrait disposer d'une part plus équitable de son territoire et qu'elle devrait être en mesure de préserver sa culture, sa langue et ses traditions compte tenu du fait qu'elle a habité sur ces terres bien avant les pionniers européens. L'engagement pris en 1986 a été ratifié en décembre 1989 à la faveur d'une annexe au protocole d'entente.

Le 28 novembre 1990, les gouvernements de l'Ontario et du Canada et la NN-A ont signé une entente sur les mesures provisoires concernant les terres et les ressources naturelles de la partie du nord de l'Ontario visée par les traités n° 9 et n° 5. Ce territoire englobe toutes les terres de la Couronne, y compris les terres couvertes d'eau, situées au nord de la "crête" qui divise la ligne de partage des eaux de la baie d'Hudson de celle du lac Supérieur. Les terres appartenant à des intérêts privés, les terres en fief simple et les terres situées à l'intérieur des limites municipales sont exclues de l'entente. Les activités qui se poursuivent dans les réserves indiennes ne sont pas visées par l'entente sur les mesures provisoires, mais sont réglementées séparément en vertu de la Loi sur les Indiens. La Commission des Indiens de l'Ontario (CIO) a assumé la présidence ainsi que la médiation dans les négociations qui ont abouti à la signature de l'entente avec la NN-A.

En vigueur depuis le 26 février 1991, l'entente sur les mesures provisoires continuera à l'être pendant trois ans à compter de la date de la signature (28 novembre 1990) ou jusqu'à ce qu'une entente en matière d'autonomie gouvernementale soit conclue, l'échéance la plus courte étant à retenir. Au début de 1991, des négociations ont été entamées en ce sens avec M. R. Rosehart, Ph.D., président de l'Université Lakehead, nommé négociateur en chef de l'Ontario.

2. CONDITIONS DE L'ENTENTE SUR LES MESURES PROVISOIRES CONCLUE AVEC LA NN-A

L'entente sur les mesures provisoires est une proposition intérimaire d'une durée de trois ans. Elle a pour but de veiller à ce que la NN-A et les 46 collectivités qui relèvent de sa compétence sur le plan politique soient avisées en ce qui a trait aux activités susceptibles d'avoir un effet "appréciable" sur leurs occupations. Le gouvernement de l'Ontario s'est engagé à négocier l'autonomie gouvernementale des groupes autochtones et cette entente représente une autre étape de franchie en matière de participation des bandes dans l'industrie minérale.

À l'heure actuelle, il existe plusieurs processus qui obligent les organismes gouvernementaux à mettre le grand public au courant des activités exercées sur les terres de la Couronne; cependant, rien ne certifie que les collectivités autochtones en ont pris connaissance. L'entente accentue le processus de notification, particulièrement au profit des collectivités affiliées à la NN-A. Elle offre aussi une tribune permettant de résoudre les questions locales en fonction principalement de l'atténuation des effets et de la protection de l'environnement.

En vertu de cette entente, la NN-A est informée de tout projet, des cas d'aliénation de terres et des activités tombant sous le coup des règlements du gouvernement ontarien et elle dispose d'un délai de "30 jours" pour donner suite au projet proposé.

L'entente n'attribue pas à la NN-A la gestion directe des terres et des ressources naturelles, mais elle prévoit un échange d'information en réponse aux préoccupations que la NN-A et ses collectivités membres ont exprimées, notamment au chapitre de la participation au processus de prise de décision concernant les terres et les ressources naturelles.

L'entente prévoit aussi l'établissement d'un groupe composé d'un membre provenant de chacune des parties signataires et de la CIO en qualité de secrétaire afin que ce groupe puisse servir de tribune chargée de résoudre les problèmes locaux et régionaux pendant la négociation de l'autonomie gouvernementale. Le pouvoir définitif sur les terres, les ressources naturelles et les formes d'administration sont des questions à discuter et à négocier durant les pourparlers sur l'autonomie gouvernementale.

3. RÉACTION DE L'INDUSTRIE MINÉRALE

Il existe dans l'entente sur les mesures provisoires conclue avec la NN-A trois grands éléments qui se rapportent à l'industrie minérale:

1) la définition des "activités importantes";

2) le délai de "30 jours" dont dispose la NN-A pour répondre à un avis concernant un projet;
3) la question de la confidentialité.

1) Définition des activités importantes

Conformément à l'entente, "l'importance" d'une activité doit être évaluée en fonction des valeurs des premières nations. Par exemple, une activité susceptible d'influer sur les territoires de piégeage, les lieux réservés aux usages rituels, à la chasse, à la pêche et à la récolte traditionnelles doit être considérée comme importante. Pour déterminer l'importance d'une activité, il faut tenir compte des facteurs comme la durée, l'ampleur et la portée, la proximité d'une collectivité membre de la NN-A et, enfin, la participation des résidents de l'extérieur.

Quant à la réaction de l'industrie minérale face à ce qui précède, elle estime qu'il faudra définir beaucoup plus clairement les "activités importantes" pour pouvoir planifier les projets d'exploration.

Elle propose de prendre seulement en considération les travaux effectués au cours de l'étape de "l'exploration avancée" en vue de déterminer s'il s'agit de répercussions importantes sur les terres. L'industrie estime que les activités qui n'exigent pas un permis de travail (havage, levés géophysiques, jalonnement des claims) devraient être exclues de la définition des "activités importantes". Ces activités n'entrent pas actuellement dans le processus de la NN-A.

2) Le processus de notification et le délai de 30 jours

Dès qu'une activité est considérée comme importante, le processus de "notification" se met en marche. L'organisme gouvernemental chargé de la délivrance des permis ou des licences doit aviser la NN-A et les collectivités membres. Dans la plupart des cas, les activités liées à l'aliénation des terres et aux projets intéressent plus d'un ministère, auquel cas chaque ministère doit donner avis à la NN-A en ce qui concerne l'élément relevant de sa responsabilité. Cet exercice peut être coordonné et le processus de notification combiné.

Les domaines suivants sont considérés comme des secteurs d'activités importants susceptibles d'avoir des effets sérieux et, partant, donner lieu à la présentation d'un avis. Veuillez prendre note qu'il ne s'agit pas d'une liste exhaustive:

. Permis d'utilisation des terres
. Baux
. Permis de récolte du riz sauvage
. Licences de pêche commerciale
. Ententes sur la gestion des forêts

- Plans de gestion du bois
- Licences de coupe du district
- Permis de travail (Loi sur les terres publiques)
- Permis de prendre ou de déverser de l'eau
- Licence délivrée en vertu de la Loi sur l'aménagement des lacs et des rivières
- Licences de piégeage
- Certificats d'approbation
- Licences d'établissement touristique
- Exemption et désignation en vertu de la Loi sur l'évaluation de l'environnement
- Baux miniers (L'octroi des baux miniers n'est pas discrétionnaire. Dès qu'une société ou corporation a exécuté les travaux conformes aux conditions prescrites, elle est légalement en droit d'obtenir un bail; l'entente sur les mesures provisoires ne modifie pas ces droits.)
- Projet hydro-électrique et corridors de transition à l'étude
- Emplacements des parcs provinciaux
- Entreposage des déchets à l'étude
- Changements des limites municipales

Exemple: Le prélèvement d'un échantillon global dans le cadre d'un projet d'exploration avancée donnera lieu aux demandes et notifications suivantes:

- Une lettre sollicitant la permission de prélever des échantillons volumineux auprès du ministère du Développement du Nord et des Mines (MDNM).
- Permis de travail, permis de franchissement d'un cours d'eau et d'entreposage des déchets auprès du ministère des Ressources naturelles (MRN).
- Permis de prise d'eau, permis d'égout et d'entreposage des déchets auprès du ministère de l'Environnement (ME).

Dès qu'une demande est présentée aux organismes gouvernementaux, la NN-A et ses membres doivent en être avisés. Parallèlement, il faut encourager les entreprises du secteur privé à mettre les habitants de la région au courant de leur plan de travail.

L'organisme gouvernemental ne doit pas délivrer de permis et de licences pendant la période de 30 jours suivant la notification. Il y a quelques exceptions à la règle: dans le cas de grands projets, le délai de 30 jours ne suffira pas à l'évaluation des répercussions. Dans certaines circonstances, lorsque le délai de 30 jours peut compromettre le déroulement du projet, il est possible de raccourcir la période de notification.

L'avis émanant de l'organisme gouvernemental doit contenir suffisamment de renseignements pour permettre à la NN-A d'évaluer l'activité. Si le gouvernement néglige d'informer la NN-A au sujet d'une activité en particulier, les premières nations

peuvent soumettre l'affaire à l'attention de la CIO et du groupe signataire de l'entente sur les mesures provisoires.

L'entente sur les mesures provisoires ne prévoit pas de mesures autres que celles auxquelles la NN-A et ses collectivités membres avaient accès avant la signature pour intervenir dans le déroulement d'une activité.

L'industrie minérale se préoccupe au sujet des retards indus découlant de la période de réponse de 30 jours et des conséquences de ce délai sur l'octroi en temps opportun des permis et des licences. En vertu de certaines circonstances, elle craint que si les renseignements contenus dans la notification ne permettent pas à la NN-A d'évaluer le projet, le délai de 30 jours applicable à la réponse soit prolongé davantage.

L'industrie minérale s'interroge aussi sur le déroulement futur d'un projet en cas de désaccord de la part de la NN-A. Il s'agit d'une préoccupation légitime. Un projet d'exploration au sein de la région visée par l'entente avec la NN-A a déjà été mis en attente pour une période indéfinie, étant donné que la bande locale a indiqué qu'elle prendrait toutes les mesures nécessaires pour paralyser la délivrance des permis.

Afin de réduire le plus possible la période d'attente, les représentants de l'industrie minérale ont proposé de commencer à compter la période de 30 jours dès réception de la demande plutôt qu'à compter du moment où le gouvernement envoie l'avis aux premières nations. Elle craint aussi que la hausse du nombre d'avis présentés à la NN-A donne lieu à un amoncellement de la paperasserie et, partant, contribue au prolongement des délais.

3) Confidentialité

L'entente conclue avec la NN-A prévoit la sauvegarde des activités confidentielles. L'entente précise que les renseignements protégés par la loi ou non consultables peuvent demeurer confidentiels.

La plupart des sociétés considèrent que le jalonnement des claims et les levés géophysiques aériens sont des renseignements confidentiels et comme ils n'ont guère de répercussions sur les terres, il est inutile de les assujettir à la notification. Cependant, les travaux d'exploration qui suivent l'obtention des droits miniers d'une parcelle de claims peuvent avoir des répercussions importantes et requièrent une notification. De la même manière, il est possible que les travaux initiaux en matière d'exploration n'influent guère sur les terres, mais si à la suite d'une découverte les activités se précipitent en milieu de saison, de nouveaux permis de travail peuvent être requis et

retarder le déroulement du projet tout en compromettant le caractère confidentiel des activités très délicates.

De l'avis de l'industrie minérale, les renseignements délicats devraient être divulgués aux organismes gouvernementaux seulement et s'il est absolument nécessaire de les soumettre à la notification, une entente officielle en matière de confidentialité doit être conclue avec la NN-A.

4. OBSERVATIONS

Comme l'entente sur les mesures provisoires a pris effet en février 1991, toutes les parties signataires évaluent continuellement le côté pratique de sa mise en oeuvre et essaient d'en éliminer les inconvénients.

Après une longue période de consultation, le ministère de Développement du Nord et des Mines et le ministère des Ressources naturelles recommandent que les activités énoncées ci-après, activités requérant un permis de travail de catégorie "A", soient définies comme "importantes" et assujetties à la notification:

- tous les travaux exigés en vertu de la Partie IX de la nouvelle Loi sur les mines (remise en état);
- tous les prélèvements d'échantillons volumineux de plus de 10 tonnes de matière;
- toutes les activités susceptibles de perturber, comme le havage excédant 1m d'épaisseur et espacé d'intervalles de moins de 20m, le dégagement, l'extraction mécanique, l'excavation mécanique de tranchées;
- les activités qui exigent de la machinerie lourde;
- le forage;
- la construction de routes et de ponts;
- les campements à long terme.

Il est à prévoir que, au moins un an après la mise en oeuvre de l'entente, les signataires seront mieux placés pour en réviser les conditions aux fins des futures négociations et de la formulation des politiques subséquentes.

ENTENTE CADRE ET ENTENTE SUR LES MESURES PROVISOIRES CONCLUES AVEC LES PREMIÈRES NATIONS DU NORD DU LAC SUPÉRIEUR

Les premières nations et les gouvernements du Canada et de l'Ontario ont signé des ententes prévoyant la négociation des terres et de plus vastes territoires pour les collectivités. Les premières nations font partie du Conseil des Indiens assujettis au Traité de 1850 et la Commission des Indiens de l'Ontario a facilité la poursuite de ces négociations et elle continuera à le faire, en plus de la négociation de l'autonomie gouvernementale à venir.

L'entente sur les mesures provisoires sera en vigueur pendant deux ans ou jusqu'au règlement des négociations entamées en vertu de l'entente cadre. L'entente sur les mesures provisoires contribue à l'établissement d'un processus en vertu duquel les premières nations sont mises au courant des projets sur les terres de la Couronne susceptibles d'avoir des répercussions importantes sur la région visée.

Les premières nations seront informées de tout "projet important" et elles disposeront d'un délai de 60 jours pour faire connaître leurs réactions à cet égard.

Les activités en matière d'exploitation minière sont exclues de l'entente sur les mesures provisoires en ce moment, mais elles feront l'objet des négociations en cours. L'exclusion permet de disposer du temps nécessaire aux discussions axées sur la meilleure façon de déterminer comment incorporer l'industrie minérale à l'entente tout en reconnaissant les difficultés que cette entente peut causer à l'exploration du minerai en particulier.

ANNEXE F

PARTICIPATION DES ASSOCIATIONS MINIÈRES

À LA SENSIBILISATION DES PEUPLES AUTOCHTONES

ANNEXE F

PARTICIPATION DES ASSOCIATIONS MINIÈRES À LA SENSIBILISATION DES PEUPLES AUTOCHTONES

1. INTRODUCTION

Au Canada, on compte un bon nombre d'associations qui représentent les intérêts des divers secteurs de l'industrie minière. Vers la fin mai, nous avons communiqué avec ces organismes, tant nationaux, provinciaux que territoriaux, pour vérifier quels programmes ils offraient aux autochtones, le cas échéant.

D'après les renseignements que nous avons recueillis, il est évident qu'un grand nombre des associations cherchent à sensibiliser les autochtones à cette industrie.

Vous trouverez ci-après une liste des projets qui ont été entrepris récemment. Il se peut donc qu'elle ne recense pas tous ceux qui existent. Néanmoins, elle nous donne une meilleure idée de ce qui se fait et de ce que l'on peut faire pour accroître la participation des autochtones.

2. ASSOCIATIONS MINIÈRE

Association minière du Canada (AMC), Ottawa
Association canadienne des prospecteurs et entrepreneurs (ACPE), Toronto

Pour traiter les questions touchant les autochtones du Yukon et des Territoires du Nord-Ouest, ces deux organismes nationaux ont décidé de conjuguer leurs efforts.

Colloques sur les revendications territoriales et l'industrie minière

o Une série de colloques réunissant des représentants de l'industrie, du gouvernement et d'organismes autochtones pour que ces intervenants discutent des répercussions que les revendications territoriales dans les Territoires pourraient avoir sur l'industrie.

Groupes de travail mixtes

o Ils ont été constitués à la suite des colloques sur les revendications territoriales.
o Ils se composent de représentants de diverses associations minières, d'organismes autochtones et d'entreprises.

o Ils sont en train d'élaborer un programme d'initiation à l'exploitation minière qui permettra aux Inuit de l'est des Territoires du Nord-Ouest d'acquérir de solides connaissances de l'exploitation minière dans le Nord.

Renseignements: AMC (613) 233-9391
ACPE (416) 362-1969

Ontario Mining Association (OMA), Toronto
Association canadienne des prospecteurs et entrepreneurs (ACPE), Toronto

Communication avec les autochtones

o L'OMA a écrit aux bandes indiennes de la province pour leur expliquer le mandat de l'association et leur donner des renseignements sur l'industrie minière en Ontario.

Colloque sur l'exploitation minière dans le nord-ouest de l'Ontario

o L'OMA et l'ACPE, en collaboration avec certaines bandes indiennes du nord-ouest de la province, s'apprêtent à vérifier s'il ne serait pas possible d'organiser un colloque sur l'industrie minière en Ontario.

Renseignements: OMA (416) 364-9301
ACPE (416) 362-1969

Mining Association of Manitoba (MAM), Winnipeg

o À l'heure actuelle, l'association n'offre pas de programmes destinés précisément aux autochtones. Toutefois, elle a déjà parrainé des activités telles que des cours de prospection, des cours interculturels, des programmes de stages et des activités d'extension des services de main-d'oeuvre qui visaient à accroître la participation des autochtones à l'industrie minière.

Renseignements: MAM (204) 942-2789

Uranium Saskatoon, Saskatoon

Uranium Today

o Il s'agit d'une équipe qui, à bord d'une caravane, parcourt la province pour faire connaître l'industrie de l'uranium aux écoles, aux groupes communautaires et au grand public.

o Cette équipe ne vise pas expressément les autochtones, mais elle peut se rendre dans les réserves et les collectivités autochtones.

Renseignements: Uranium Saskatchewan (306) 242-8222

Mining Association of British Columbia (MABC), Vancouver
British Columbia and Yukon Chamber of Mines (BCYCM), Vancouver

De concert avec des membres des industries des forêts et de la pêche, l'association minière de la Colombie-Britannique et la chambre des mines de la Colombie-Britannique et du Yukon ont participé conjointement à une série de réunions d'initiation avec des groupes d'autochtones à travers la Colombie-Britannique. Ces réunions se révèlent précieuses, car elles fournissent l'occasion aux représentants de tous les groupes de jeter les fondements pour les discussions à venir. D'autres tribunes de même nature seront peut-être organisés à l'avenir, de manière à bâtir sur la réussite des réunions initiales.

Pour tout renseignement complémentaire, communiquer avec :

MABC, au (604) 681-4321
BCYCM, au (604) 681-5328

Northwest Territories Chamber of Mines (NTCM), Yellowknife

Comité sur l'emploi, la sécurité et l'industrie minière dans le Nord (CESIMN)

o La NTCM ainsi que des représentants des ministères gouvernementaux, des collèges et des organismes autochtones locaux qui s'intéressent à la fois à la formation et à l'industrie minière siègent au CESIMN.
o Le Comité se réunit régulièrement pour discuter de moyens d'élaborer et de lancer des programmes visant à former les autochtones.

o Grâce aux efforts du Comité, les programmes suivants sont actuellement offerts ou en voie d'examen :

- un programme de formation d'ouvriers au concentrateur par l'entremise de l'Arctic College;
- un programme de formation préalable à l'emploi comportant divers volets, dont des cours de rattrapage scolaire et d'initiation à l'exploitation minière. On devrait commencer à l'offrir en septembre 1991;
- un programme de prospection devant débuter en 1992.

Renseignements: (NTCM) (403) 873-5281

ANNEXE G

RÉSUMÉ DES RÉSPONSES AUX QUESTIONNAIRES SUR LA PARTICIPATION DES AUTOCHTONES À L'INDUSTRIE MINIÈRE

ANNEXE G

RÉSUMÉ DES RÉPONSES AUX QUESTIONNAIRES SUR LA PARTICIPATION DES AUTOCHTONES À L'INDUSTRIE MINIÈRE

1. MÉTHODOLOGIE

Lorsqu'on a élaboré le plan de travail pour la deuxième phase de l'étude sur la participation des autochtones à l'exploitation minière, il était évident que, pour atteindre les objectifs établis par les ministres des Mines en 1989, le Sous-comité aurait à consulter l'industrie et les autochtones. Vu les ressources financières limitées du Sous-comité, seules certaines mines en exploitation et réserves ou collectivités autochtones associées à ces mines ont été contactées.

Dans la préparation des questionnaires et la sélection des compagnies et des collectivités ou réserves à interroger, le Sous-comité a été généreusement appuyé et aidé par les associations nationales autochtones (l'Inuit Tapirisat du Canada, l'Assemblée des premières nations et le Conseil national des autochtones du Canada) et par les associations minières (l'Association minière du Canada, l'Association canadienne des prospecteurs et des entrepreneurs).

Chaque compétence a choisi les mines en exploitation (et dans un cas, les compagnies d'exploration) et les collectivités ou réserves qui répondraient aux questionnaires.

Deux questionnaires ont été préparés par le Sous-comité; un pour les compagnies minières (addenda A, p. 121) et un autre presque pareil pour les réserves et collectivités autochtones (addenda B, p. 131). Une fois remplis, ces formulaires ont été envoyés au représentant du Sous-comité au Ministère des Affaires indiennes et du Nord canadien qui a coordonné à la fois l'analyse et le présent résumé (annexe H p. 143).

En tout, les représentants de 28 mines situées en Alberta, en Colombie-Britannique, au Manitoba, au Nouveau-Brunswick, dans les Territoires du Nord-Ouest, en Saskatchewan et au Yukon ont répondu aux questionnaires. Trois autres compagnies ont répondu qu'elles n'avaient pas de participation des autochtones ou ne tenaient pas de dossiers d'emploi faisant la distinction entre les races, et par conséquent n'ont pas répondu au questionnaire.

Des réponses ont été reçues de 20 collectivités et réserves situées en Colombie-Britannique, au Yukon, dans les Territoires du Nord-Ouest et en Saskatchewan.

Tous les renseignements ont été fournis avec l'assurance que les données sur les opérations individuelles ou sur les collectivités ou réserves demeureraient confidentielles.

2. RÉSULTATS DU SONDAGE

2.1 Introduction

Vous trouverez ci-après le résumé des réponses données dans les questionnaires. Il fournit les informations et les commentaires obtenus sur les sujets sous les rubriques générales. Les renseignements fournis par les compagnies et par les collectivités ou réserves ont été inclus et, s'il y a lieu, ils ont été indiqués séparément. Cependant, il est important de souligner que tous les répondants n'ont pas répondu à toutes les questions.

Au moment de la compilation des résultats du sondage auprès des compagnies minières, il est devenu évident qu'il y avait de grandes différences entre les exploitations avec service de navette aérienne et les lotissements. Ces différences sont reflétées dans ce document. Bien que le sondage ait été fait auprès des collectivités autochtones et des réserves, il n'y avait pas de différence appréciable dans leurs réponses, de sorte qu'on ne les a pas différenciées.

Inévitablement, quand on généralise et groupe les réponses, on perd quelques détails et omet des commentaires détaillés. Il est reconnu que certains des commentaires détaillés omis se rapportent à des problèmes particulièrement importants dans des cas précis.

Toutefois, le présent résumé vise à saisir l'essentiel des informations et des commentaires contenus dans les questionnaires.

2.2 Expérience des autochtones dans les opérations minières et les emplois autochtones

À l'exception de trois, toutes les collectivités et réserves avaient des membres qui avaient participé à certains aspects de l'exploitation minière ou avaient de l'expérience dans ce domaine. Par conséquent, leurs perceptions de l'industrie reposent sur une expérience réelle. Une collectivité n'a aucune expérience avec l'exploitation minière, mais elle participe actuellement à un nouveau projet d'exploitation minière, donnant par conséquent un exemple de participation dans les premières étapes du développement.

Les autochtones ont indiqué qu'ils sont engagés, ou ont été engagés, directement dans toutes les opérations des

compagnies et par les entreprises et entrepreneurs qui appuient les opérations. Les activités incluaient l'exploration, la mise en valeur et l'exploitation minière / traitement, à temps partiel, à temps complet ou sur une base saisonnière. L'activité qu'ils ont le plus souvent mentionné était Exploitation minière / traitement.

Les deux emplois qui sont revenus le plus souvent comme emplois occupés par les membres des collectivités ou des réserves étaient Manoeuvre et Camionneur / Opérateur d'équipement, suivis de Travailleur attaché au camp puis de Métiers, De soutien, Entretien, Apprentissage, Services alimentaires, Construction générale / sous-traitance et Sécurité sur le site. D'autres emplois ont été mentionnés, notamment pilotes, coordonnateur de l'emploi, homme de métier dans les mines souterraines, foreur et aide-foreur.

Les réponses des compagnies couvraient les mines à ciel ouvert et les mines souterraines; les mines d'où l'on extrait divers minéraux (surtout les mines de métaux précieux et de base, d'uranium et de charbon); l'exploration, la mise en valeur, l'exploitation minière / traitement et d'autres activités; les emplois à temps partiel, à temps complet et saisonniers; les lotissements et les exploitations avec navette aérienne (une compagnie a indiqué qu'elle était à la fois une exploitation avec service de navette aérienne et un lotissement[7]) et les opérations dans plusieurs compétences politiques et régions géographiques du Canada.

Dix-sept compagnies ont indiqué qu'elles avaient employé des autochtones en 1990, alors qu'une compagnie a mentionné n'avoir jamais engagé d'autochtones et trois ne savaient pas. Les principaux emplois occupés par les autochtones directement embauchés par les compagnies étaient Camionneur / Opérateur d'équipement, puis Métiers, suivis d'Employé de soutien, Entretien, Travailleur attaché au camp, Construction générale / sous-traitance, Apprentissage, Direction, Services alimentaires et Sécurité sur le site. Un certain nombre d'autres emplois ont été mentionnés, notamment mineurs et stagiaires mineurs souterrains, menuisiers, opérateurs des usines de traitement, techniciens et service du personnel, service des loisirs et personnel de formation. Les autochtones participent à une plus grande gamme d'activités dans les exploitations avec navette aérienne que dans les lotissements.

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[7] Cette compagnie avait davantage les caractéristiques d'une exploitation avec navette aérienne et a été incluse dans cette catégorie aux fins de la présente étude.

Plusieurs compagnies qui ont répondu au sondage ont indiqué qu'elles ne tenaient pas de statistiques sur la race ou les principes. On a également fait remarquer que les statistiques peuvent indiquer des emplois comblés par des employés autochtones, mais ne montrent pas le nombre total d'employés autochtones à un moment précis. Vu ces limites, il est impossible d'avoir des mesures quantitatives de l'emploi autochtone et, dans certains cas, certaines compagnies ont indiqué que les renseignements fournis peuvent ne pas être représentatifs de la situation réelle.

2.3 Avancement des employés autochtones

Plusieurs compagnies ont indiqué que les employés autochtones qui avaient suivi une formation avaient atteint l'échelon supérieur de leur échelle salariale. Certains avaient été promus à des postes supérieurs plus élevés sans problème, qu'il s'agisse de postes techniques ou de supervision. D'autres compagnies ont dit avoir eu de la difficulté ou ne pas avoir eu de succès avec les programmes d'apprentissage, à cause du taux de roulement élevé des employés autochtones. Certaines compagnies n'avaient pas d'informations précises sur les employés autochtones. Cependant, elles ont affirmé que les employés autochtones progressaient comme les autres travailleurs, suivant les dispositions de progression normales de la convention collective ou suivant leurs compétences et leurs aptitudes ou leur mérite au sein du personnel et dans les postes de formation.

Certains autochtones étaient du même avis que les compagnies sur cette question, c'est-à-dire qu'ils étaient optimistes sur leurs chances d'avancement. Ils reconnaissaient que la difficulté de certains employés à garder un emploi continu rend l'avancement difficile dans une opération syndiquée. Dans d'autres cas, les autochtones se sentaient rejetés (même après avoir suivi la formation) ou entrevoyaient peu de chances de progrès ou d'avancement. Cela était attribuable, en partie, au manque d'études ou d'expérience.

2.4 Contrats conclus entre les compagnies minières et les entreprises autochtones

Les compagnies passent des contrats avec des entreprises autochtones le plus souvent dans les domaines suivants: coupage de lignes / géophysique, services de camionnage et construction générale / sous-traitance. Une mine de la Saskatchewan a indiqué que son bail relatif aux droits de surface exige que les entrepreneurs maximisent la participation autochtone à la main-d'oeuvre. Dans les autres cas en Saskatchewan, en Alberta et en Colombie-Britannique, les conditions concernant l'emploi dans le Nord

et les sous-traitants nordiques ou le recours aux autochtones étaient une part importante du processus de soumissions et des marchés.

Les compagnies ont mentionné un certain nombre de problèmes liés à l'emploi d'autochtones ou à l'adjudication de marchés à des autochtones, notamment l'absentéisme et le roulement du personnel, les problèmes d'alcoolisme et de consommation de drogues, les attitudes au travail, les différences culturelles, les niveaux de compétence, les coûts plus élevés et les obstacles des syndicats. Les remèdes utilisés pour régler ces problèmes incluaient le counselling, la formation, le renvoi suivant la politique de la compagnie, la prestation d'aliments du pays et de la TV nordique et une plus grande attention au recrutement des nouveaux employés. On a souligné qu'un certain nombre de ces problèmes s'appliquait à tous les employés, non seulement aux employés autochtones.

Les villages et les collectivités percevaient les mêmes problèmes sur certaines questions, mais ils y ajoutaient le manque de formation, la discrimination, l'absence de promotions, les problèmes de santé et les considérations sociales et familiales.

2.5 Les obstacles qui empêchent les autochtones de participer à l'exploitation minière et aux activités connexes

Les trois obstacles les plus souvent mentionnés par les compagnies minières étaient: Manque d'expérience, Aucun désir de travailler dans une mine et Accès limité aux études et à la formation requises. Les autres facteurs indiqués beaucoup moins souvent étaient: Disponibilité / coût des transports, Barrières linguistiques, Mauvaise compréhension de la procédure de demande d'emploi et d'entrevue, Réglementation relative à l'affiliation syndicale, Manque d'information concernant les possibilités d'emploi et Pressions exercées par les pairs. Par ailleurs, des compagnies ont indiqué un manque d'intérêt pour les emplois de débutant, la discrimination, les différences culturelles et la crainte d'approcher une compagnie minière pour lui demander du travail.

Les collectivités et les réserves ont également indiqué l'accès limité aux études et le manque d'expérience comme deux obstacles très importants. D'autres obstacles ont été indiqués comme étant importants, notamment Manque d'information concernant les possibilités d'emploi, Disponibilité / coût des transports, Barrières linguistiques, Mauvaise compréhension de la procédure de demande d'emploi et d'entrevue et Réglementation relative à l'affiliation syndicale. Les autres obstacles mentionnés

incluaient le manque d'intérêt pour l'exploitation minière et la crainte de répercussions néfastes de l'exploitation minière dans une région.

2.6 Obstacles qui empêchent les compagnies d'embaucher des autochtones ou de leur adjuger des marchés

Les trois obstacles indiqués le plus souvent par les compagnies étaient: Manque d'expérience, Peu ou pas de demandes d'emploi provenant d'autochtones et Formation non pertinente. Un certain nombre d'autres obstacles ont été mentionnés, dont quelques-uns étaient très importants pour une mine en particulier, soit la distance entre les collectivités et une mine nordique éloignée. Une autre compagnie a indiqué que les opérations étaient entièrement mécanisées et qu'il n'y avait aucun poste de manoeuvre.

Les autochtones ont le plus souvent indiqué Formation non pertinente et Manque d'expérience suivis de Coût de la formation, Peu ou pas de demandes d'emploi provenant d'autochtones et Barrières linguistiques. Les autres obstacles mentionnés par les autochtones étaient qu'ils ne désiraient pas travailler dans une mine, leur restriction à occuper des emplois à court terme qui nécessitent beaucoup de main-d'oeuvre et le fait que les sous-traitants font venir leur propre personnel et n'embauchent pas de résidents locaux.

2.7 Études

On a demandé aux compagnies de préciser le niveau minimal de scolarité requis pour les employés des postes de débutant les plus bas, c'est-à-dire pour tous les employés, non seulement les employés autochtones. Les exigences variaient entre les compagnies, allant d'aucun critère précisé ou aucun critère minimal à une 12 année. Certaines ont indiqué de la souplesse dans la scolarité requise, mais avaient d'autres exigences de base telles que l'aptitude à lire, écrire et communiquer en anglais, des aptitudes en mathématiques, des habiletés en ce qui concerne les moteurs, etc. Dans deux cas, les exigences pour le travail en usine de traitement étaient une 10 année.

Quatre compagnies ont indiqué qu'elles avaient embauché des employés qui ne savaient ni lire ni écrire en anglais ou en français. Aucune de ces compagnies ne donne de formation linguistique, mais dans certains cas les notes de service, les notes et les signalisations sont traduites et des interprètes sont fournis au besoin.

Les collectivités et les réserves ont indiqué que le niveau moyen de scolarité atteint par leurs peuples allait d'une 4

année à une 12 année. Toutefois, un grand nombre ont indiqué que le niveau moyen de scolarité atteint était une 10 année ou moins. Le niveau de scolarité minimum atteint par les autochtones qui avaient été engagés par les compagnies se situe entre une 4 année et une 12 année.

Dans six collectivités / réserves, le secondaire au complet est offert, mais non dans 14 autres. Dans l'ensemble, on n'aimait pas que les étudiants quittent la maison pour terminer leur secondaire. Toutefois, certaines collectivités / réserves acceptaient le fait que les choix étaient limités et on estimait que cela permettait aux autochtones de connaître une plus grande collectivité et des groupes culturels variés.

Des cours aux adultes étaient offerts dans la plupart des collectivités qui ont répondu au questionnaire et les résidents de certaines collectivités et réserves les ont suivi pour obtenir des emplois dans l'industrie minière. Dans un cas on a mentionné le problème de la demande insuffisante, c'est-à-dire que ceux qui se perfectionnaient attendaient les emplois et plus de formation.

Divers types de formation scolaire et de métiers étaient ou sont disponibles à un grand nombre de collectivités, soit dans la collectivité même ou ailleurs. Certains problèmes ont été reconnus en ce qui concerne le financement et également avec le fait de devoir envoyer les jeunes suivre leur formation à l'extérieur.

2.8 Aide de programmes

Les trois quarts des compagnies connaissaient les programmes fédéraux, provinciaux, territoriaux ou locaux offerts afin d'aider les autochtones à accéder à des emplois, à obtenir la formation ou à se perfectionner. Parmi ces compagnies, la plupart avaient eu recours aux programmes provinciaux ou territoriaux. À peu près le même nombre de compagnies avaient eu recours aux programmes fédéraux et locaux en comparaison des compagnies qui n'y avaient pas eu recours. En général, les exploitations avec navette aérienne semblent avoir eu recours aux programmes gouvernementaux plus souvent que les lotissements. Peu d'informations étaient fournies sur les programmes précis utilisés ou les résultats obtenus.

La plupart des collectivités et des réserves étaient au courant des programmes visant à aider les autochtones et environ la moitié y avaient eu recours.

La plupart des collectivités et des réserves connaissaient également les programmes ou les services conçus spécialement pour aider les autochtones dans la création d'entreprises,

et environ la moitié de ces collectivités et réserves les avaient utilisés. Un répondant a indiqué que les gens de la région n'avaient pas les biens qui semblent être indispensables pour obtenir des prêts et des subventions de tous les gouvernements.

2.9 Formation offerte par les compagnies

Moins de la moitié des compagnies qui ont répondu au questionnaire ont indiqué qu'elles avaient offert des programmes de formation, d'études ou de perfectionnement des compétences pour les autochtones. La plupart des compagnies qui l'ont fait étaient des exploitations avec service de navette aérienne.

Des cours d'initiation au travail, de la formation scolaire, de la formation en cours d'emploi, des cours de métiers et des cours d'orientation sur la compagnie avaient été offerts. Certains cours de formation interne des compagnies étaient donnés au site de la mine, tandis que d'autres cours de formation étaient offerts en collaboration avec le gouvernement, les collèges ou avec d'autres mines en exploitation. Les compagnies estimaient que la formation avait été en grande partie très fructueuse.

Plusieurs collectivités et réserves ne savaient pas si les compagnies avaient ou non des programmes de formation. Lorsqu'elles avaient suivi les programmes des compagnies, leurs commentaires étaient en général positifs. Certains problèmes ont été notés comme par exemple le cas où la plupart des stagiaires ne sont pas demeurés avec la compagnie après avoir suivi la formation.

2.10 Syndicats

La plupart des lotissements qui ont répondu au questionnaire étaient syndiqués, tandis que la plupart des exploitations avec service de navette aérienne ayant répondu au sondage ne l'étaient pas. La convention collective à une mine en Saskatchewan avec navette aérienne inclut une clause de préférence nordique qui établit des objectifs et des engagements précis en ce qui a trait à l'embauche, à la formation, à la promotion et au rappel des employés nordiques ou autochtones. Un programme d'apprentissage spécial pour les apprentis autochtones a été négocié à une autre mine en Saskatchewan.

2.11 Communications

La plupart des compagnies ont indiqué qu'elles avaient recours aux médias anglophones et francophones non locaux et locaux lorsqu'elles font la publicité des emplois offerts ou

affichent tout autre avis. Trois ont recours aux médias locaux en langue autochtone et une utilise les médias en langue autochtone non locaux. D'autres compagnies misaient sur les demandes non sollicitées, les appels téléphoniques locaux, les entrevues universitaires, Emploi et Immigration Canada (EIC) et les bureaux de recrutement.

Les collectivités et les réserves ont été mises au courant des différentes étapes des opérations minières par les personnes-ressources des compagnies, les médias anglophones et francophones, les médias en langue autochtone, le processus d'obtention de permis et d'autres indicateurs de l'activité des compagnies. Les évaluations de l'efficacité des efforts de communication des compagnies allaient de insatisfaisant à très bon. Un répondant a signalé que les communications avec une mine locale s'étaient améliorées au fil des ans.

Voici quelques recommandations faites par des collectivités et des réserves sur la manière de maintenir la circulation des informations provenant des compagnies: donner accès aux bureaux des villages et des bandes dans le Nord à tous les faits nouveaux dans le Nord se rapportant aux mines; tenir les nordiques au fait des opérations par le biais des bureaux locaux et des médias d'information, à partir du jour 1 des activités de la compagnie; rencontres de la compagnie avec les conseils municipaux, les piégeurs, les pêcheurs et le grand public; consultation avec les dirigeants des bandes et visites des sites. Une bande a mentionné qu'elle avait pris l'initiative d'améliorer les communications plutôt que d'attendre que la compagnie fasse quelque chose.

2.12 Embauchage des employés autochtones

Embauchage

Le quart des compagnies avaient des personnes de descendance autochtone parmi leur personnel d'embauchage. Plusieurs compagnies avaient eu recours à des organismes ou à des tiers, dans certains cas des organismes appartenant à des autochtones, pour engager leurs employés autochtones. Aucune compagnie n'avait eu recours exclusivement aux organismes pour embaucher son personnel. Parmi les autres organismes utilisés par les compagnies notons les services d'extension pour le Nord, la Commission de l'Emploi et de l'Immigration du Canada, les bureaux des bandes et, dans un cas, le gouvernement territorial.

Entrevues

Les compagnies se servaient de méthodes officielles et de méthodes officieuses pour interroger les employés éventuels, notamment les appels téléphoniques, les entrevues personnelles, la vérification des curriculum vitae et les tests d'aptitude.

L'anglais était la langue prédominante utilisée, mais dans certains cas en Saskatchewan et dans les Territoires du Nord-Ouest on utilisait les langues autochtones et le français, au Nouveau-Brunswick.

Pour les lotissements on effectuait des entrevues personnelles au site de la mine surtout, tandis que les compagnies avec service de navette aérienne avaient tendance à utiliser les installations locales des collectivités et des réserves ou le siège social de la compagnie. Parmi les autres endroits où étaient tenues les entrevues notons les bureaux des services d'extension pour les autochtones, l'université, les collèges et les bureaux d'emploi dans les villes et dans d'autres villes au besoin.

2.13 Poursuite des activités traditionnelles et sensibilisation aux différences culturelles

Type d'exploitation et dispositions pour les employés autochtones

Parmi les compagnies qui ont répondu au sondage il y avait des exploitations avec service de navette aérienne jusqu'au chantier, des exploitations avec transport quotidien par autobus jusqu'au chantier et des lotissements avec transport privé et par autobus (subventionné dans certains cas). Comme il a été mentionné précédemment, une compagnie avait indiqué qu'elle était à la fois une exploitation avec service de navette aérienne et un lotissement. Les mesures visant à permettre aux employés autochtones la poursuite de leurs activités traditionnelles incluent des horaires de travail spéciaux et des programmes de rotation du personnel et des endroits où ils peuvent parler leur propre langue, jouer aux cartes, communiquer avec leur famille par radio et s'adonner à leurs loisirs. Une compagnie prévoit des absences autorisées anticipées et des absences autorisées spéciales pour la chasse dans certaines circonstances.

Rotations du travail

Les rotations du travail étaient rapportées par les exploitations avec navette aérienne seulement. La durée du travail par rotation varie d'une mine à l'autre selon certains critères tels que le poste occupé (gestion

supérieure, chef de service), le service et le lieu d'embauchage (sud ou nord).

Dans certains cas, des rotations plus courtes sont prévues pour les employés autochtones. À certaines autres exploitations, le travail par rotation satisfait les employés autochtones, mais il n'avait pas été établi précisément à cette fin.

Coordonnateur des affaires autochtones

Presque le quart des compagnies ayant répondu au sondage employaient un coordonnateur. Tous les coordonnateurs sont embauchés par les exploitations avec service de navette aérienne et tous, à l'exception d'un seul, sont de descendance autochtone. Les coordonnateurs étaient présents dans une vaste gamme d'activités, dont le recrutement et l'embauche des employés autochtones, la création d'entreprises nordiques et autochtones, la liaison avec les dirigeants communautaires et les résidents locaux, le travail avec les organismes gouvernementaux afin de planifier et de coordonner la formation autochtone et d'aider les employés autochtones à résoudre leurs problèmes.

Pour les collectivités et les réserves qui avaient eu des relations avec les coordonnateurs, la plupart des expériences avaient tendance à être positives, mais dans certains cas les relations ont été limitées.

La moitié des collectivités et des réserves ne savaient pas si les compagnies avaient fait des efforts pour permettre la poursuite des activités traditionnelles par les employés autochtones ou sensibiliser les travailleurs autochtones et non autochtones à leurs différences culturelles. Environ le quart était au courant des efforts de la compagnie pour répondre aux intérêts des autochtones et, en général, les commentaires reçus étaient favorables à l'égard de ces efforts.

Sensibilisation aux différences culturelles

La majorité des compagnies n'offre pas de formation sur les différences culturelles pour les employés autochtones ou non autochtones. Un peu plus de compagnies avec service de navette aérienne que de lotissements donnent ce genre de formation. Selon une compagnie, les résultats étaient limités en raison de l'absentéisme et des taux de roulement élevés bien que les programmes aient permis de mieux comprendre les deux cultures. Une autre compagnie avait estimé que la formation avait été très efficace.

Plus de la moitié des collectivités et des réserves étaient au courant des programme de formation sur les différences culturelles des compagnies. Une a fait le commentaire que le personnel de la compagnie devrait suivre également la formation comme les employés autochtones.

2.14 Processus de consultation / d'information des compagnies

Avant de commencer leurs activités liées aux mines, plus de la moitié des compagnies ont entrepris des consultations avec les autochtones, les collectivités ou les groupes. La plupart des exploitations avec service de navette aérienne avaient entrepris des consultations comme l'ont fait environ la moitié des compagnies dans les villes. Parmi les méthodes utilisées par les compagnies, notons des visites des responsables de la compagnie, des présentations et des discussions avec les particuliers et les collectivités, des audiences publiques, un processus de consultation officiel, des visites sur le site et la discussion des débouchés d'entreprise et d'emploi. Une compagnie a dit avoir embauché des autochtones qui parlaient en son nom durant les audiences et qui la représentaient durant les visites aux collectivités nordiques.

La plupart des exploitations avec service de navette aérienne et environ le tiers des lotissements consultent les collectivités. La consultation se fait de manière officielle et de manière officieuse, c'est-à-dire rencontres d'un agent de liaison autochtone nordique avec les représentants des autochtones et des collectivités relativement à une expansion; rencontres régulières d'un Comité de liaison autochtone / communautaire; consultations suivies avec les conseils tribaux; réunions prévues à l'avance afin de discuter des préoccupations mutuelles; visites du site de la mine par le conseil et visites périodiques prévues pour les résidents locaux (3 ou 4 fois par année); communications proactives et consultations sur les activités en cours et les plans futurs, principalement les questions d'ordre environnemental. Une compagnie a toutefois indiqué qu'il n'y avait pas eu beaucoup d'autochtones à une réunion publique qu'elle avait tenue. Par ailleurs, elle n'avait reçu aucune réponse à ses offres d'emplois.

Plus de la moitié des collectivités et des réserves ont indiqué que des processus de consultation et d'information étaient actuellement en cours avec une compagnie. La nature des processus de consultation et d'information suivis reflète les processus décrits par les compagnies. Dans un cas, on avait indiqué que les réunions sont contradictoires.

2.15 Ententes socio-économiques et études sur les répercussions socio-économiques

Études sur les répercussions socio-économiques

Avant de commencer l'exploitation minière, la plupart des exploitations avec service de navette aérienne et environ la moitié des lotissements avaient effectué des études sur les répercussions socio-économiques dans la région qui serait touchée par leurs opérations.

La plupart des répercussions cernées étaient positives. Voici quelques exemples tirés des études: possibilités d'entreprises locales accrues, création d'emplois pour la population locale, possibilités de formation pour les résidents locaux et transport amélioré. Certaines études ont signalé des mesures afin d'aider les peuples autochtones, notamment l'accès à un bureau nordique et l'établissement d'un bureau de recrutement / coordonnateur autochtone, des rotations spéciales du travail, des points d'arrêt dans le Nord, la prestation du transport aérien et la préférence aux entrepreneurs nordiques. Dans certains cas, on avait prédit que les répercussions seraient minimes en raison des exploitations déjà existantes. Une étude avait prédit que le travail par rotation aurait des répercussions néfastes sur les familles.

Ententes socio-économiques

Environ les deux-tiers des exploitations avec service de navette aérienne ont conclu des ententes socio-économiques et presque la moitié des lotissements l'ont fait également. La moitié de ces ententes ont fait l'objet de négociations à cause du mandat du gouvernement et le reste a été fait sur une base volontaire. Les signataires étaient le plus souvent la compagnie et les gouvernements provincial ou territorial, mais dans certains cas le gouvernement fédéral a signé les ententes également, et dans un cas, une collectivité / une réserve a aussi signé l'entente.

Les obligations des compagnies varient entre les ententes et incluent des dispositions telles que l'embauchage du plus grand nombre de résidents locaux et le recours aux entreprises locales, la présentation de rapports provisoires annuels aux gouvernements, la maximisation des avantages culturels et sociaux tout en minimisant les répercussions sociales et culturelles néfastes, la restriction de la production afin de maximiser la vie de la mine, l'utilisation des biens, de l'équipement et des bateaux canadiens et des dépenses annuelles d'exploration minimes. Certaines ententes fixent les quantités de biens et de services locaux à acquérir dans une région ou d'une

compétence précise, y compris des clauses concernant les entreprises et les emplois autochtones.

Dans le cadre d'une entente, le gouvernement était tenu de construire et d'administrer l'infrastructure publique. Dans une autre, les obligations du gouvernement incluaient la prestation de programmes de formation liés aux besoins de l'industrie lourde, l'obligation de présenter à la compagnie des renseignements sur les résidents compétents et les programmes d'aide pertinents et la publication d'un bulletin de nouvelles trimestriel.

La plupart des compagnies estimaient que leurs ententes avaient été efficaces; une compagnie a cependant dit avoir eu un succès minime en ce qui concerne les emplois. Une compagnie a déclaré que, à cause de son entente, elle s'était davantage efforcée de maximiser le recours à la main-d'oeuvre et aux entreprises locales, avec le résultat que toutes les obligations de l'entente avaient été remplies.

Parmi les avantages découlant des ententes socio-économiques signalés par les collectivités et réserves, il y a les informations fournies et les emplois offerts à ceux qui cherchent du travail et un exemple bien précis d'embauchage des résidents locaux. Un répondant a indiqué qu'une compagnie, à cause de son entente, force actuellement ses entrepreneurs à embaucher des nordiques.

2.16 Sociétés de personnes, entreprises conjointes et accords financiers

Presque la moitié des compagnies ont formé des sociétés de personnes ou des entreprises conjointes ou conclu d'autres types d'accords financiers avec des autochtones ou des entreprises appartenant à des autochtones. Ces associations avaient trait au transport par autobus, à l'enlèvement du bois, au nettoyage des convoyeurs, au logement, au transport par camion, à la sécurité et aux services de conciergerie, au coupage de lignes et à l'entretien des routes. Certaines compagnies ont indiqué que des discussions avaient été entamées afin de faire participer les autochtones à des entreprises conjointes dans le domaine de l'exploration, dans des projets de modernisation et dans l'exploitation des mines. Une compagnie a exprimé le désir de faire participer une bande locale comme partenaire si c'était compatible avec les plans à long terme de la bande.

2.17 Avantages de la participation des autochtones pour une compagnie

Seulement deux compagnies, dont une qui est une compagnie d'exploration, ont déclaré n'y voir aucun avantage. Toutes les autres compagnies ont indiqué qu'elles retiraient des avantages de la participation des autochtones. L'avantage qui est revenu le plus souvent était Bonne pratique commerciale; suivaient ensuite Accès à la main-d'oeuvre locale et Meilleure réputation, puis Démarche coopérative concernant l'exploration des terres autochtones et Accès aux programmes gouvernementaux suivis de Meilleures relations de travail et Meilleurs résultats financiers.

La plupart des exploitations avec service de navette aérienne ont mentionné les avantages Frais de transport et d'exploitation moins élevés et Sources proches de biens et services, mais non les lotissements.

Les autres avantages mentionnés étaient une plus grande stabilité et des opérations qui fonctionnent mieux ainsi que les avantages économiques des achats locaux. Deux compagnies ont indiqué qu'elles se sentaient obligées de faire participer les autochtones à leurs opérations.

2.18 Coût de la participation des autochtones pour une compagnie

Plusieurs compagnies ont indiqué que cela ne leur occasionnait aucun coût supplémentaire. D'autres ont mentionné Coûts plus élevés (productivité inférieure) et Relations avec le personnel plus complexes comme les principaux coûts de la participation des autochtones. Plusieurs compagnies ont indiqué la formation en particulier comme un coût. Toutefois, une compagnie a indiqué qu'à part les coûts de formation du programme original, l'embauchage des autochtones n'avait ajouté aucun coût à ses opérations. La compagnie a poursuivi en disant qu'étant donné qu'une bonne partie de la formation était financée par les organismes gouvernementaux, le coût n'était pas énorme pour la compagnie.

2.19 Avantages que retirent les collectivités et les réserves de la participation aux activités minières

Certaines collectivités et réserves ont indiqué qu'il n'y avait aucun avantage. Le principal avantage indiqué le plus souvent était Possibilités d'emploi, suivi d'Injection d'argent au sein de la collectivité et de Formation et perfectionnement des compétences polyvalentes, puis de Amélioration de la qualité de vie, Propositions d'affaires locales, Services aériens améliorés et Communications améliorées. Parmi les autres avantages mentionnés, notons

les dons de compagnies pour les installations récréatives locales ou d'autres installations et les visites des mines organisées pour les enfants.

2.20 Principaux coûts de la participation aux activités minières pour les particuliers

Certaines collectivités et réserves ont indiqué que cela ne coûtait rien aux particuliers. D'autres ont mentionné Problèmes sociaux accrus, Problèmes de santé accrus et Problèmes familiaux accrus comme les principaux coûts, suivis de Perte de la capacité d'exercer les activités traditionnelles. Parmi les autres coûts indiqués notons l'emploi saisonnier, l'obligation de déménager, les coûts personnels (transport, usure du véhicule) et la séparation de la famille en raison des rotations de travail. Une collectivité a fait observer que certains des problèmes indiqués ont pu empirer durant l'emploi dans les mines, mais qu'ils existaient avant l'exploitation de la mine et pourraient empirer lorsque la mine fermera. Une autre a indiqué que c'est les particuliers qui doivent assumer la responsabilité, si les coûts sociaux sont trop élevés, non l'employeur.

2.21 Principaux coûts de la participation aux activités minières pour les collectivités ou les réserves

Un certain nombre de collectivités ont dit qu'il n'y avait aucun coût. Les principaux coûts indiqués par les autres étaient Problèmes liés à la poursuite des activités traditionnelles, y compris Perte de la faune, Modification des cycles migratoires de la faune et Perturbation des sentiers de piégeage. Les coûts mentionnés un peu moins souvent étaient Problèmes environnementaux, incluant la pollution de l'eau et la pollution du sol / pollution souterraine. Les autres coûts indiqués étaient la perte spirituelle attribuable à l'exploration dans une région culturelle importante et à la protection insuffisante des activités indiennes (trop de chasseurs et de pêcheurs dans la région).

Dans plusieurs cas, les collectivités et les réserves ont informé la compagnie des problèmes et dans deux cas les gouvernements provincial ou territorial en ont également été informés. On a indiqué qu'une certain nombre de compagnies avaient pris, ou prennent, des mesures afin d'atténuer les répercussions néfastes de leurs opérations, y compris l'échantillonnage de l'eau et le versement d'indemnités annuelles. Une compagnie s'efforce de minimiser la pollution tout en tenant la collectivité informée de ses plans. Elle examine également une certaine forme de compensation pour la perturbation des sentiers de piégeage.

Un certain nombre de compagnies ont indiqué qu'aucune préoccupation ne leur avait été signalée. Les préoccupations environnementales mentionnées aux autres compagnies concernaient le forage, l'élimination des résidus et la poussière; la pollution des eaux traditionnelles de pêche; le transport routier des substances toxiques; la santé et la sécurité; les émissions; et le contrôle de l'air et de l'eau. La crainte de répercussions inconnues des radiations a été indiquée par une compagnie. Une autre compagnie a parlé de l'inquiétude des autochtones concernant une pisciculture parce qu'on ne comprenait pas le programme de reprise d'eau de la compagnie. On tente actuellement d'apaiser les préoccupations par des communications proactives et des visites sur le site pour les autochtones. Les autres domaines posant des problèmes ayant été signalés aux compagnies se rapportaient au maintien des activités traditionnelles, à la participation insuffisante des collectivités dans l'exploitation et aux problèmes sociaux et de santé accrus.

2.22 Attitudes des autochtones à l'égard de la participation à l'industrie minière

Plusieurs collectivités étaient très optimistes quant à l'emploi dans les mines établissant, dans certains cas, un lien avec le besoin d'emplois et la nécessité d'appuyer les activités traditionnelles. D'autres ont indiqué que leur approbation de l'exploitation minière était conditionnelle, comptant sur des facteurs atténuants tels que la formation offerte, une semaine de travail plus courte ou l'assurance qu'il n'y aura pas de répercussions environnementales ou sociales à long terme inacceptables. Dans un cas, la bande a souligné la nécessité d'avoir part aux profits de l'exploitation minière et de participer à la planification et aux opérations puisqu'elle sera toujours là lorsque la mine sera fermée.

Certaines attitudes négatives ont été exprimées relativement au manque de débouchés et de possibilités d'entreprise; aux préoccupations soulevées par les rapports des médias d'information et de la télévision; et aux risques de pollution. Une collectivité a indiqué que les avantages découlant de l'emploi local relativement limité l'emportaient sur le coût d'avoir une mine à proximité. Quelqu'un a dit que les compagnies ne font que fournir des débouchés pour les autochtones; elles font de l'argent puis s'en vont. Deux répondants ont indiqué ne pas désirer participer à l'exploitation minière, une préférant tirer profit d'autres débouchés dans l'exploitation forestière, les scieries, l'alimentation et la pêche qui sont considérées comme des domaines plus prometteurs.

2.23 Facteurs afin d'accroître les niveaux de participation

Les collectivités et les réserves ont indiqué le plus souvent Niveau plus élevé d'études et de compétences comme un facteur majeur qui contribuerait à accroître la participation des autochtones; venaient ensuite à peu près à égalité Possibilité accrue d'une participation autochtone, Accès accru aux études et à la formation, Procédures d'embauche des sociétés, Compréhension des activités minières et des politiques des entreprises par la collectivité. Les facteurs indiqués moins souvent étaient Politiques et programmes gouvernementaux et Collectivités autochtones à proximité du projet. D'autres facteurs ont été mentionnés, notamment les exigences des syndicats, la création d'un cadre coopératif de travail, des visites dans les mines et le financement d'installations de loisirs dans une réserve. Trois ont dit qu'aucun facteur ne pourrait accroître la participation des autochtones.

Les compagnies ont également mentionné le plus souvent Niveau plus élevé d'études et de compétences comme un facteur majeur qui contribuerait à une participation plus grande des autochtones. Un autre facteur souvent mentionné était Compréhension des activités minières par la collectivité suivi de Accès accru aux études et à la formation, Possibilités d'investissement accrues, Collectivités autochtones situées à proximité du projet, Politiques des sociétés, Procédures d'embauche de la société et Programmes et politiques gouvernementaux. Parmi les autres facteurs mentionnés par les compagnies, notons une meilleure motivation et des initiatives plus efficaces des autochtones pour obtenir des emplois, plus de logements disponibles pour les employés autochtones, et plus grande acceptation par les autochtones de la progression, à partir des emplois de débutant jusqu'aux meilleurs emplois, et engagement à plus long terme envers l'employeur. On a recommandé de sensibiliser davantage les étudiants à l'industrie minière et de leur faire connaître les opérations par des projets en classe qui incluraient des voyages sur place aux opérations locales.

2.24 Autres commentaires

Dans les deux questionnaires, il y avait une partie où les collectivités, les réserves ou les compagnies minières, selon le cas, pouvaient exprimer brièvement leurs commentaires ou indiquer tout sujet omis ou insuffisamment couvert. Le résumé qui suit englobe les commentaires des compagnies minières ou des collectivités et réserves qui portent sur des questions non traitées dans les réponses précédentes. Les commentaires qui ne faisaient que

reprendre ou élaborer des réponses déjà incluses n'ont pas été fournis.

Collectivités:

Les autochtones veulent des emplois, non du bien-être.

On se préoccupe de l'environnement, mais on désire également faire partie d'un groupe salarié. Comme le piégeage et la pêche ne sont plus des activités viables dans la région, les mines offrent une source de revenu de rechange, quoique un grand nombre de personnes n'iront pas travailler dans les mines parce qu'elles doivent quitter leur foyer.

La formation sur les différences culturelles devrait être mise en place par quelqu'un d'impartial. Les emplois ne devraient pas être offerts ni aux habitants du Sud ni aux autochtones, s'ils refusent de suivre la formation.

Des sondages annuels devraient être faits dans chaque collectivité afin de déterminer l'intérêt local pour les emplois et dans quel domaine. La mine et la collectivité devraient négocier avec les deux paliers de gouvernement afin d'examiner sérieusement la formation et le perfectionnement en vue des emplois.

C'est la responsabilité du gouvernement d'examiner, avec les collectivités autochtones, les préoccupations exprimées par les résidents et de trouver des solutions positives.

Les emplois dans l'industrie minière sont importants pour le Nord. Les mines doivent être plus ouvertes à l'embauchage d'autochtones. Il a été prouvé que les autochtones peuvent contribuer considérablement au bien de l'industrie minière et cela doit être reconnu et encouragé.

Compagnies:

En général, les employés autochtones de la compagnie n'espèrent pas des emplois à long terme, bien qu'il y ait quelques exceptions à la règle. Les compagnies offrent donc des emplois temporaires en blocs d'environ six semaines afin de satisfaire à ce besoin.

Une compagnie qui n'emploie pas actuellement d'autochtones se sent obligée de les assimiler dans son effectif. Leur absence est due au nombre peu élevé de demandes d'emplois attribuable, en partie, au peu d'effort conscient de la part de la compagnie. Le questionnaire a déclenché cette sensibilisation au sein de la compagnie et on examinera la possibilité d'embaucher des autochtones dans l'avenir.

Les autochtones devraient reconnaître les ressources minières comme une source d'avantages et appuyer encore plus l'industrie minière. Ils devraient jouer un rôle plus pro-actif en établissant des programmes de formation qui leur ouvriraient des possibilités.

Les politiques paternalistes doivent faire place aux initiatives motivées.

Une compagnie souligne qu'il y avait un grand nombre d'autochtones compétents dans la région. Dans les cinq prochaines années, les processus ordinaires seront suivis pour l'emploi et les marchés d'entreprise. La compagnie a eu du succès à cause de sa politique visant à passer du "spécial" au "normal" ou de "dépendant" à "indépendant". Au niveau de la présidence, on a toujours manifesté un appui interne marqué pour ce programme.

Cette petite mine a été un chef de file dans l'embauchage des autochtones et dans l'aide fournie pour créer des entreprises autochtones. Il faut reconnaître l'apport considérable des populations locales et de leurs dirigeants dans la manière d'aborder l'éducation et le perfectionnement. Les rapports entre la population locale et la compagnie ont été positifs et pourraient servir d'exemple dans l'avenir.

ADDENDA A

SONDAGE DES SOCIÉTÉS MINIÈRES
SOUS-COMITÉ DU GROUPE DE TRAVAIL INTERMINISTÉRIEL
SUR L'INDUSTRIE MINIÈRE ET SUR LA PARTICIPATION
DES AUTOCHTONES A L'EXPLOITATION MINIÈRE

Poste/titre du répondant :

Tous les renseignements sont **CONFIDENTIELS** (ex. : la provenance des réponses particulières ne sera pas divulguée dans le rapport qui suivra cette étude).
Aux fins du sondage, "autochtone" désigne les populations autochtones suivantes : Indiens inscrits et non inscrits, Métis et Inuit.
NOTE : Vous pouvez joindre des feuilles supplémentaires pour répondre à l'une ou l'autre des questions suivantes.

1. **Au cours de l'année 1990, à quelles activités associées à l'exploitation minière votre société a-t-elle participé ?**
   ( ) Exploration
   ( ) Mise en valeur
   ( ) Exploitation/traitement
   ( ) Autre(s) (précisez)
   S'il s'agit d'exploitation/de traitement :
   TYPE D'EXPLOITATION :
   ( ) à ciel ouvert
   ( ) souterraine
   ( ) à ciel ouvert et souterraine
   PRINCIPAUX PRODUITS :

2. **En 1990, combien de personnes ont travaillé directement dans chacune des activités suivantes associées à l'exploitation minière ?**

ACTIVITÉ	**NOMBRE D'EMPLOYÉS***		
	TEMPS PARTIEL *	**TEMPS PLEIN ***	**SAISONNIER ***
Exploration			
Mise en valeur			
Exploitation/traitement			
Autre(s) (précisez)			

   *** Si votre société a conclu d'autres types de contrat d'emploi non énumérés ci-dessus, veuillez préciser.**

3. **Votre société a-t-elle déjà embauché directement des autochtones ?**
   ( ) Jamais **PASSEZ À LA QUESTION 6.**
   ( ) Au cours des années précédentes mais non en 1990 **PASSEZ À LA QUESTION 4.**
   ( ) En 1990
   En 1990, combien d'autochtones ont été embauchés directement par votre société dans chacune des activités suivantes associées à l'exploitation minière ?

ACTIVITÉ	NOMBRE D'EMPLOYÉS *		
	TEMPS PARTIEL *	TEMPS PLEIN *	SAISONNIER *
Exploration			
Mise en valeur			
Exploitation/traitement			
Autre(s) (précisez)			

*** Si votre société a conclu d'autres types de contrat d'emploi non énumérés ci-dessus, veuillez préciser.**

4. **Quels sont les principaux emplois occupés par les autochtones qui ont été embauchés directement par votre société ?**
   ( ) Direction
   ( ) De soutien
   ( ) Manoeuvre
   ( ) Métiers
   ( ) Camionneur/Opérateur d'équipement
   ( ) Entretien
   ( ) Apprentissage
   ( ) Surveillance de chantier
   ( ) Travailleur au camp
   ( ) Services alimentaires
   ( ) Construction générale/sous-traitance
   ( ) Autre(s) (précisez)

5. **Au plan de l'avancement dans votre société, de quelle façon décririez-vous les progrès réalisés par l'ensemble des employés autochtones (ex. : parmi tous les employés autochtones qui se sont inscrits à un stage d'apprentissage ou à d'autres programmes de formation, environ quel pourcentage a terminé et réussi) ?**

6. **Outre l'emploi direct visant les activités associées à l'exploitation minière, votre société a-t-elle conclu des marchés avec des entreprises appartenant à des autochtones ?**
   ( ) Jamais **PASSEZ À LA QUESTION 7.**
   ( ) Au cours des années précédentes mais non en 1990
   ( ) En 1990

   Veuillez indiquer le genre d'entreprise(s) avec laquelle votre société a passé des marchés. (cochez la/les réponse(s) appropriée(s))

   <u>Entreprises appartenant à des autochtones</u>
   ( ) Services de camionnage
   ( ) Services aériens
   ( ) Restauration
   ( ) Géophysique/coupage de lignes
   ( ) Location de matériel
   ( ) Guidage
   ( ) Jalonnement
   ( ) Services de conciergerie
   ( ) Travaux de laboratoire
   ( ) Construction générale/sous-traitance

( ) Surveillance de chantier
( ) Autre(s) (précisez)

7. **Lors de la passation de marchés, votre société obéit-elle à des critères de contenu autochtone ?**
( ) Non **PASSEZ À LA QUESTION 8.**
( ) Oui
Dans l'affirmative, élaborez votre réponse.

8. **Y a-t-il eu des problèmes associés à l'emploi ou à la sous-traitance d'autochtones lors de vos activités ?**
( ) Non **PASSEZ À LA QUESTION 9.**
( ) Oui
Dans l'affirmative, veuillez indiquer la nature du/des problème(s) et élaborez sur les mesures prises par votre société pour les surmonter.

NATURE DU/DES PROBLEME(S)	MESURES PRISES POUR LE/ LES SURMONTER

9. **A votre avis, quels sont les obstacles à l'embauche ou à la sous-traitance d'employés autochtones ?** Cochez la ou les réponse(s) appropriée(s).
( ) Il n'y a aucun obstacle **PASSEZ À LA QUESTION 10.**
( ) Manque de formation
( ) Manque d'expérience liée à l'emploi
( ) Barrières linguistiques
( ) Coût de la formation
( ) Peu ou pas de demandes d'emploi provenant d'autochtones
( ) Autre(s) (précisez)

10. **A votre avis, quels sont les obstacles qui empêchent les autochtones de participer à l'industrie minière et aux activités connexes ?** Cochez la ou les réponse(s) appropriée(s).
( ) Il n'y a pas d'obstacle **PASSEZ À LA QUESTION 11.**
( ) Accès limité aux études et à la formation requises
( ) Manque d'expérience liée à l'emploi
( ) Barrières linguistiques
( ) Pression exercée par les pairs qui s'opposent à la participation à l'industrie minière
( ) Mauvaise compréhension de la procédure de demande d'emploi et d'entrevue
( ) Réglementation relative à l'affiliation syndicale
( ) Disponibilité/coût des transports vers et en provenance du chantier
( ) Manque d'information touchant les possibilités d'emploi
( ) Aucun désir de travailler dans une mine ou dans une activité connexe
( ) Autre(s) (précisez)

11. Quel est le niveau minimal d'études requis au premier niveau d'entrée des employés ?
Niveau :

12. Votre société embauche-t-elle ou conclut-elle des marchés avec les autochtones qui ne parlent ni n'écrivent couramment l'anglais ou le français ?
( ) Non PASSEZ À LA QUESTION 13.
( ) Oui
Dans l'affirmative, votre société offre-t-elle des cours de langue à ses employés ?
( ) Non
( ) Oui
Veuillez indiquer tout autre moyen utilisé par votre société pour s'adapter aux différences linguistiques qui existent entre les employés autochtones et non autochtones.

13. Connaissez-vous des programmes ou des services fédéraux, provinciaux/territoriaux ou locaux conçus pour aider les autochtones à obtenir de l'emploi, de la formation ou un perfectionnement (ex. : formation à l'emploi ou programme d'apprentissage) ?
( ) Non PASSEZ À LA QUESTION 14.
( ) Oui
Dans l'affirmative,
a. Votre société a-t-elle eu recours à un programme ou des services du gouvernement <u>fédéral</u> pour aider les autochtones à obtenir un emploi dans votre société ?
( ) Non
( ) Oui
b. Votre société a-t-elle eu recours à des programmes ou services du gouvernement <u>provincial/territorial</u> pour aider les autochtones à obtenir un emploi dans votre société ?
( ) Non
( ) Oui
c. Votre société a-t-elle eu recours à des programmes ou services <u>locaux</u> pour aider les autochtones à obtenir un emploi dans votre société ?
( ) Non
( ) Oui

14. Votre société a-t-elle mis sur pied des programmes de formation, d'études ou de perfectionnement à l'intention des autochtones ?
( ) Non PASSEZ À LA QUESTION 15.
( ) Oui
Dans l'affirmative, veuillez élaborer et mentionner le degré de réussite de ces programmes.

15. **Votre entreprise est-elle syndiquée ?**
( ) Non **PASSEZ À LA QUESTION 16.**
( ) Oui
Dans l'affirmative, existe-t-il des dispositions spéciales en vigueur mises de l'avant par votre société ou le syndicat pour aider les autochtones à obtenir de l'emploi lié à l'exploitation ? Élaborez votre réponse.

16. **Pour faire la publicité des emplois offerts ou pour afficher tout autre avis, parmi les moyens d'information suivants, quel est celui qu'utilise votre société ?**

	LOCAL	NON LOCAL
Médias anglophones/francophones	( )	( )
Médias autochtones	( )	( )
Autre(s) (précisez)	( )	( )

17. **Y a-t-il un poste de coordonnateur aux affaires autochtones dans votre société ?**
( ) Non **PASSEZ À LA QUESTION 18.**
( ) Oui
Dans l'affirmative, le bureau du coordonnateur est-il situé sur le chantier ( ) ou à l'extérieur du chantier ( ) ?
Est-ce que le coordonnateur est d'origine autochtone ?
( ) Non
( ) Oui
Veuillez expliquer les fonctions du coordonnateur.

18. **Y a-t-il des personnes d'origine autochtone parmi le personnel responsable de l'embauche dans votre société?**
( ) Non
( ) Oui

19. **Est-ce que votre société a embauché ou est sur le point d'embaucher des employés autochtones par l'entremise d'une agence ou d'un tiers ?**
( ) Non **PASSEZ À LA QUESTION 18.**
( ) Oui
Dans l'affirmative, est-ce que tous vos employés autochtones ont été embauchés par l'entremise d'une agence ou d'un tiers ?
( ) Non
( ) Oui
L'agence ou le tiers était-il exploité par des autochtones ?
( ) Non
( ) Oui
Décrivez l'engagement de votre société à l'égard de l'agence ou du tiers.

20a. Quelle procédure votre société utilise-t-elle pour interviewer ses futurs employés ? Cochez la ou les réponse(s) appropriée(s).

( ) Officielle
( ) Officieuse
( ) Appel téléphonique
( ) Rencontre en personne
( ) Autre(s) (précisez)

b. Quelle est la langue utilisée lors des entrevues ? Cochez la/les réponse(s) appropriée(s).

( ) Anglais
( ) Français
( ) Langue(s) autochtone(s) (précisez)
( ) Autre(s) (précisez)

c. Où ont lieu les entrevues en personne ?

( ) Siège social de la société
( ) Chantier minier
( ) Collectivité locale/réserve
( ) Autre(s) (précisez)

21. Dans quelle catégorie classeriez-vous votre exploitation ? Ne cochez qu'une seule réponse.

( ) Camp : navette aérienne
( ) Camp : navette terrestre
( ) Lotissement : navette terrestre
( ) Lotissement : navette privée
( ) Autre(s) (précisez)

22. Existe-t-il des dispositions spéciales concernant l'exercice des activités traditionnelles par les employés autochtones ?

( ) Non **PASSEZ À LA QUESTION 23.**
( ) Oui

Dans l'affirmative, élaborez votre réponse.

23. Si votre exploitation est isolée (ex. : navette terrestre / aérienne), quelle est la rotation habituelle d'emploi? Est-ce que la rotation habituelle d'emploi a été établie de manière à tenir compte des préoccupations et des activités traditionnelles des employés autochtones ?

( ) Non **PASSEZ À LA QUESTION 24.**
( ) Oui

Dans l'affirmative, donnez les détails et expliquez sur quoi se fonde la rotation d'emploi.

24. **Votre société a-t-elle mis à son programme une formation sur la sensibilisation à la culture autochtone et autre pour les employés autochtones et(ou) non autochtones ?**

Employés autochtones	Employés non autochtones
( ) Non	( ) Non
( ) Oui	( ) Oui

Dans l'affirmative pour l'un et l'autre groupe, veuillez élaborer et commenter l'efficacité de cette formation.

25. **Avant le commencement de votre activité associée à l'exploitation minière, votre société a-t-elle mis sur pied des processus d'information et de consultation avec des particuliers autochtones, des collectivités ou des groupes autochtones ?**

( ) Non **PASSEZ À LA QUESTION 26.**
( ) Oui

Dans l'affirmative, veuillez indiquer s'il s'agit de particuliers, de collectivités ou de groupes et la nature des processus de consultation.

26. **Y a-t-il dans votre société des processus d'information ou de consultation actuellement en cours avec des particuliers autochtones, des collectivités autochtones ou des groupes autochtones ?**

( ) Non **PASSEZ À LA QUESTION 27.**
( ) Oui

Dans l'affirmative, veuillez indiquer s'il s'agit de particuliers, de collectivités ou de groupes et la nature des processus de consultation.

27. **Avant le commencement de l'activité minière, votre société a-t-elle mené une étude d'impact socio-économique sur la région touchée par votre exploitation ?**

( ) Non **PASSEZ À LA QUESTION 28.**
( ) Oui

Dans l'affirmative, expliquez les principales conclusions de l'étude.

28. **Avant le commencement d'une activité minière, votre société a-t-elle conclu une entente de mise en valeur ou une entente socio-économique avec le gouvernement et(ou) avec un groupe ou un organisme autochtone local ?**

( ) Non **PASSEZ À LA QUESTION 30.**
( ) Oui

Dans l'affirmative,

a. Pourquoi une entente a-t-elle été négociée ?

( ) Raison inconnue
( ) Commandée par le gouvernement
( ) Raison volontaire

b. Qui sont les signataires à l'entente ? Cochez la/les réponse(s) appropriée(s).

( ) La collectivité/réserve
( ) La société
( ) Le gouvernement fédéral
( ) Le gouvernement provincial
( ) Autre(s) (précisez)

c. **Quelles sont les principales obligations de chacun des signataires ?**

29. **S'il existe une entente de mise en valeur ou une entente socio-économique, jusqu'à quel point a-t-elle été efficace ?**

30. **Votre société a-t-elle envisagé ou négocié des associations commerciales, des entreprises en participation ou d'autres types d'ententes financières avec les autochtones ou des entreprises appartenant à des autochtones ?**

( ) Non **PASSEZ À LA QUESTION 31.**
( ) Oui

Dans l'affirmative, élaborez votre réponse.

31. **Veuillez préciser ce que sont pour votre société les principaux avantages de la participation des autochtones à votre exploitation. Cochez la/les réponse(s) appropriée(s).**

( ) Aucun avantage pour la société
PASSEZ À LA QUESTION 32.
( ) Accès à la main-d'oeuvre locale
( ) Moins de retard (période de démarrage plus courte)
( ) Frais de transport et d'exploitation moins élevés
( ) Meilleures relations de travail
( ) Accès aux programmes gouvernementaux
( ) Sources proches de biens et services
( ) Démarche coopérative concernant l'exploration des terres autochtones
( ) Meilleure réputation
( ) Bonne pratique commerciale
( ) Meilleurs résultats financiers
( ) Autre(s) (précisez)

32. **Veuillez indiquer quels sont pour votre société les principaux coûts de la participation autochtone.** Cochez la/les réponse(s) appropriée(s).

( ) Aucun coût **PASSEZ À LA QUESTION 33.**
( ) Relations avec le personnel plus complexes
( ) Coordonnateur aux affaires autochtones
( ) Programmes de sensibilisation à la culture autochtone
( ) Retards dans le démarrage en raison du temps consacré à la formation
( ) Plus grande participation du gouvernement
( ) Coûts plus élevés

( ) Productivité inférieure par suite d'un manque d'expérience en exploitation minière/traitement
( ) Nécessité de traduire les panneaux, etc.
( ) Autre(s) (précisez)

33. Veuillez indiquer quels sont pour les collectivités/réserves autochtones locales les principaux coûts ou les préoccupations principales qui résultent de votre exploitation minière. Cochez la/les réponse(s) appropriée(s).

( ) Aucun coût/préoccupation **PASSEZ À LA QUESTION 34.**
( ) Préoccupations environnementales (veuillez élaborer)
( ) Problèmes concernant la poursuite des activités traditionnelles
( ) Perte de la faune
( ) Modifications dans les cycles migratoires de la faune
( ) Perturbation des sentiers de piégeage
( ) Autre(s) (précisez)
( ) Absence de participation de la collectivité à l'exploitation
( ) Problèmes de santé accrus
( ) Problèmes sociaux accrus
( ) Autre(s) (précisez)

34. Veuillez déterminer les principaux facteurs qui contribueraient à augmenter la participation autochtone à l'exploitation minière et aux activités connexes. Cochez la/les réponse(s) appropriée(s).

( ) Aucun facteurs principaux **PASSEZ À LA QUESTION 35.**
( ) Collectivités autochtones situées à proximité du projet
( ) Niveau plus élevé d'études et de compétence des autochtones
( ) Accès accru aux études/formation
( ) Politiques gouvernementales
( ) Programmes gouvernementaux
( ) Politiques de compagnie
( ) Procédures d'embauche de la société
( ) Exigences syndicales
( ) Compréhension des activités minières par la collectivité
( ) Possibilité accrue d'une participation autochtone aux entreprises en participation ou à d'autres types d'investissement
( ) Autre(s) (précisez)

35. Si vous désirez apporter d'autres commentaires ou si un sujet a été omis, veuillez élaborer ci-dessous.

ADDENDA B

SONDAGE
DES RÉSERVES ET DES COLLECTIVITÉS AUTOCHTONES
SOUS-COMITÉ DU GROUPE DE TRAVAIL INTERMINISTÉRIEL SUR L'INDUSTRIE MINIÈRE ET SUR LA PARTICIPATION DES AUTOCHTONES A L'EXPLOITATION MINIÈRE

Poste/titre du répondant :

Tous les renseignements sont **CONFIDENTIELS** (ex. : la provenance des réponses particulières ne sera pas divulguée dans le rapport qui suivra cette étude).
Aux fins du sondage, "autochtone" désigne les populations autochtones suivantes : Indiens inscrits et non inscrits, Métis et Inuit.

NOTE : Vous pouvez joindre des feuilles supplémentaires pour répondre à l'une ou l'autre des questions suivantes.

1. **Veuillez indiquer la région géographique dans laquelle les membres de votre collectivité/réserve s'adonnent à des activités traditionnelles et nommez les activités.**

2. **Une exploitation minière ou des activités associées à l'exploitation minière ont-elles eu lieu dans la région visée par les activités traditionnelles déterminées à la question 1 ?**
   ( ) Non
   ( ) Oui

3. **Y a-t-il des membres de votre collectivité ou de votre réserve qui ont participé à des activités associées à l'exploitation minière au sein de la collectivité/réserve, dans la région où des activités traditionnelles ont lieu, ou ailleurs ?**
   ( ) Jamais **PASSEZ À LA QUESTION 7.**
   ( ) Au cours des années précédentes mais non en 1990 **PASSEZ À LA QUESTION 4.**
   ( ) En 1990

   En 1990, à laquelle des activités suivantes les membres de votre collectivité/réserve ont-ils participé et à quel endroit?

ACTIVITÉ	COLLECTIVITÉ/ RÉSERVE	RÉGION D'ACTIVITÉS TRADITIONNELLES	AILLEURS
Exploration			
Mise en valeur			
Exploitation minière/traitement			
Autre(s) (précisez)			

4. **En 1990, environ combien de membres de votre collectivité/ réserve ont été directement embauchés par la/les société(s) qui exploitent l'une ou l'autre des activités minières énumérées à la question 3 ?**

ACTIVITÉ	NOMBRE D'EMPLOYÉS *	
	TEMPS PARTIEL*	TEMPS PLEINSAISONNIER*
Exploration		
Mise en valeur		
Exploitation minière/traitement		
Autre(s) (précisez)		

*** Si la/les société(s) a/ont conclu d'autres types d'ententes au niveau de l'emploi qui ne sont pas énumérées ci-dessus, veuillez élaborer.**

5. **Quels sont/ont été les principaux emplois occupés par des membres de votre collectivité/réserve ayant été embauchés directement par la/les société(s) mentionnée(s) à la question 4.**

( ) Direction
( ) De soutien
( ) Manoeuvre
( ) Métiers
( ) Camionneur/Opérateur d'équipement
( ) Entretien
( ) Apprentissage
( ) Surveillance de chantier
( ) Travailleur attaché au camp
( ) Services alimentaires
( ) Construction générale/sous-traitance
( ) Autre(s) (précisez)

6. **En ce qui a trait à l'avancement au sein de la/des société(s), comment décririez-vous le cheminement moyen des employés autochtones ?**

7. **Outre l'emploi direct dans les activités associées à l'exploitation minière, des entreprises locales appartenant à des autochtones ont-elles conclu des marchés avec la/les société(s) minière(s) ?**

( ) Jamais **PASSEZ À LA QUESTION 8.**
( ) Au cours des années précédentes mais non en 1990
( ) En 1990

Veuillez indiquer quel genre d'entreprises ont conclu des contrats avec la/les société(s) minière(s). (cochez la/les réponse(s) appropriée(s))

<u>Entreprises appartenant à des autochtones</u>

( ) Services de camionnage
( ) Services aériens
( ) Restauration
( ) Géophysique/coupage de lignes
( ) Location de matériel

( ) Guidage
( ) Jalonnement
( ) Services de conciergerie
( ) Travaux de laboratoire
( ) Construction générale/sous-traitance
( ) Surveillance de chantier
( ) Autre(s) (précisez)

8. **Est-ce que les membres de votre collectivité/réserve ont connu des difficultés lorsqu'ils étaient à l'emploi ou lors de contrats avec l'exploitation minière ou lors d'activités associées à l'exploitation minière déterminées dans les questions précédentes ?**
( ) Non **PASSEZ À LA QUESTION 9.**
( ) Oui
Dans l'affirmative, veuillez indiquer la nature du/des problème(s) et expliquez les mesures prises par la société et(ou) votre collectivité/réserve pour les surmonter.

NATURE DU/DES PROBLEME(S)	**MESURES PRISES POUR LE/LES SURMONTER**

9. **A votre avis, quels sont les obstacles qui empêchent les autochtones de participer à l'industrie minière et aux activités associées à l'industrie minière?** Cochez la/les réponse(s) appropriée(s).
( ) Il n'y a pas d'obstacle **PASSEZ À LA QUESTION 10.**
( ) Accès limité aux études et à la formation requises
( ) Manque d'expérience liée à l'emploi
( ) Barrières linguistiques
( ) Pression exercée par les pairs qui s'opposent à la participation à l'industrie minière
( ) Mauvaise compréhension de la procédure de demande d'emploi et d'entrevue
( ) Réglementation relative à l'affiliation syndicale
( ) Disponibilité/coût des transports vers et en provenance du chantier
( ) Manque d'information concernant les possibilités d'emploi
( ) Aucun désir de travailler dans une mine ou dans une activité connexe
( ) Autre(s) (précisez)

10. **À votre avis, quels sont les obstacles qui empêchent l'embauche ou la sous-traitance d'employés autochtones ?** Cochez la ou les réponses appropriées.
( ) Il n'y a aucun obstacle **PASSEZ À LA QUESTION 11.**
( ) Formation non pertinente
( ) Manque d'expérience liée à l'emploi
( ) Barrières linguistiques
( ) Coût de la formation
( ) Peu ou pas de demandes d'emploi provenant d'autochtones
( ) Autre(s) (précisez)

11. **Quel est le niveau moyen d'études des membres de votre collectivité/réserve ?**
Niveau :
Quel est le niveau minimal d'études des membres de votre collectivité/réserve ayant été embauchés par la/les société(s) mentionnée(s) à la question 4 ?
Niveau :

12. **Est-ce qu'un programme complet d'études secondaires est accessible dans votre collectivité/réserve ?**
( ) Oui **PASSEZ À LA QUESTION 14.**
( ) Non
Dans la négative, quel est le dernier niveau offert ?

13a. **Si un programme complet d'études secondaires n'est pas accessible dans votre collectivité/réserve, veuillez fournir les renseignements concernant la fréquentation d'autres institutions ailleurs.**
i. Distance entre la collectivité et l'école secondaire :
ii. Moyens de transport utilisés pour rejoindre l'institution :
iii. Est-ce que les étudiants doivent habiter à l'extérieur de la collectivité/réserve pour suivre les cours ?
( ) Non
( ) Oui

b. **Que pensent les membres de votre collectivité/réserve d'avoir à se déplacer à l'extérieur de la collectivité/réserve pour poursuivre leurs études secondaires?**

14a. **L'enseignement aux adultes est-il accessible dans votre collectivité/réserve?**
( ) Oui **PASSEZ À LA QUESTION 15.**
( ) Non
Dans la négative, veuillez fournir des renseignements sur l'institution d'enseignement aux adultes la plus proche.
i. Distance entre la collectivité et l'institution d'enseignement aux adultes la plus proche
ii. Moyens de transport utilisés pour se rendre à l'institution
iii. Les étudiants doivent-ils habiter à l'extérieur de la collectivité/réserve pour suivre les cours?
( ) Non
( ) Oui
iv. Est-ce que les étudiants doivent payer les frais de déplacement et d'hébergement ?
( ) Non
( ) Oui

b. **Est-ce que le programme d'enseignement aux adultes a été utilisé par les membres de votre collectivité/réserve pour obtenir de l'emploi dans l'industrie minière et aux activités associées énumérées aux questions 2 et 3 ?**

( ) Non
( ) Oui
Dans l'affirmative ou la négative, expliquez pourquoi.

15. **Y a-t-il une/des institution(s) accessible(s) aux membres de votre collectivité/réserve qui offre(nt) une formation appropriée à l'emploi dans l'industrie minière et les activités connexes ?**
( ) Non **PASSEZ À LA QUESTION 16.**
( ) Oui
Dans l'affirmative, quel est le genre de formation offert ?
Est-ce que cette/ces institution(s) a/ont été utilisée(s) par des membres de votre collectivité/réserve pour obtenir de l'emploi dans l'industrie minière et les activités associées énumérées aux questions 2 et 3 ?
( ) Non
( ) Oui
Dans l'affirmative ou la négative, expliquez pourquoi.

16. **Savez-vous s'il existe des programmes ou des services fédéraux, provinciaux/territoriaux ou locaux conçus pour aider les autochtones à obtenir de l'emploi, de la formation ou un perfectionnement (ex. : formation à l'emploi ou programme d'apprentissage) ?**
( ) Non **PASSEZ À LA QUESTION 17.**
( ) Oui
Dans l'affirmative,
a. Les membres de votre collectivité/réserve ont-ils eu recours à un programme ou des services du gouvernement <u>fédéral</u> pour obtenir de l'emploi associé à l'industrie minière ?
( ) Non
( ) Oui
b. Les membres de votre collectivité/réserve ont-ils eu recours à des programmes ou services du gouvernement <u>provincial/territorial</u> pour obtenir de l'emploi associé à l'industrie minière ?
( ) Non
( ) Oui
c. Les membres de votre collectivité/réserve ont-ils eu recours à des programmes ou services <u>locaux</u> pour obtenir de l'emploi associé à l'industrie minière?
( ) Non
( ) Oui

17. **Connaissez-vous des programmes ou des services fédéraux, provinciaux/territoriaux ou locaux conçus pour aider les autochtones à créer des entreprises ?**
( ) Non **PASSEZ À LA QUESTION 18.**
( ) Oui

Dans l'affirmative,
a. Est-ce que les membres de votre collectivité/réserve ont eu recours à des programmes ou services offerts par le gouvernement <u>fédéral</u> pour créer des entreprises ?
( ) Non
( ) Oui
b. Est-ce que les membres de votre collectivité/réserve ont eu recours à des programmes ou services <u>provinciaux/territoriaux</u> pour créer des entreprises ?
( ) Non
( ) Oui
c. Est-ce que les membres de votre collectivité/réserve ont eu recours à des programmes ou des services <u>locaux</u> pour créer des entreprises ?
( ) Non
( ) Oui

18. A votre connaissance, est-ce que l'une ou l'autre des sociétés a mis en place leur propre formation, leur propre programme d'études ou de perfectionnement à l'intention des autochtones ?
( ) Ne sais pas **PASSEZ À LA QUESTION 19.**
( ) Non **PASSEZ À LA QUESTION 19.**
( ) Oui
Dans l'affirmative, veuillez élaborer et indiquer le degré de réussite de ces programmes.

19. A votre connaissance, est-ce que l'une ou l'autre des entreprises précisées est syndiquée ?
( ) Ne sais pas **PASSEZ À LA QUESTION 20.**
( ) Non **PASSEZ À LA QUESTION 20.**
( ) Oui
Dans l'affirmative, y a-t-il des dispositions spéciales en vigueur, mises de l'avant par soit la/les société(s) minière(s) ou le/les syndicat(s) pour aider les autochtones à obtenir de l'emploi lié à ces activités ? Veuillez élaborer.

20. Comment votre collectivité/réserve a-t-elle appris l'existence des activités énumérées aux questions 2 et 3 ?
Légende :
A La société minière
B Médias anglophones/francophones
C Médias autochtones
D Processus d'obtention de permis
E Autre(s) (précisez)

ACTIVITÉ	CODE
Exploration	
Mise en valeur	
Exploitation minière/traitement	
Autre(s) (précisez)	

21. **Est-ce que la/les société(s) minière(s) ont informé de façon satisfaisante votre collectivité/réserve de l'existence des activités minières énumérées aux questions 2 et 3 ?**

( ) Non
( ) Oui

Dans la négative, qu'aurait(ent) dû faire la/les société(s) minière(s) pour faire circuler l'information ?
Dans l'affirmative, veuillez indiquer la façon dont l'information a circulé.

22. **Comment qualifieriez-vous l'efficacité de l'affichage des emplois et autres avis par les sociétés minières ou les sociétés associées à l'industrie minière ? Veuillez expliquer.**

23. **A votre connaissance, les sociétés ont-elles fait l'effort de concilier les activités traditionnelles des autochtones et(ou) les différences culturelles entre les travailleurs autochtones et non autochtones ?**

( ) Ne sais pas **PASSEZ À LA QUESTION 24.**
( ) Non **PASSEZ À LA QUESTION 24.**
( ) Oui

Dans l'affirmative, veuillez élaborer et commenter la réussite de ces tentatives.

24. **À votre connaissance, est-ce que l'une ou l'autre des sociétés a mis au point un programme de sensibilisation multiculturelle à l'intention des employés autochtones et(ou) non autochtones ?**

Employés autochtones :	Employés non autochtones :
( ) Ne sais pas	( ) Ne sais pas
( ) Non	( ) Non
( ) Oui	( ) Oui

Dans l'affirmative pour l'un ou l'autre cas, veuillez élaborer et commenter l'efficacité de cette formation.

25. **Est-ce que l'une ou l'autre des sociétés mentionnées à la question 3 a un poste de coordonnateur aux affaires autochtones ?**

( ) Ne sais pas **PASSEZ À LA QUESTION 27.**
( ) Non **PASSEZ À LA QUESTION 27.**
( ) Oui

Dans l'affirmative, combien de société(s)?

26. **Veuillez décrire la nature des contacts que les membres de votre collectivité/réserve ont eus avec le coordonnateur aux affaires autochtones mentionné à la question 25.**

27. **Avant le commencement de toute activité associée à l'exploitation minière, est-ce que la/les société(s) a/ont mis sur pied un processus d'information et de consultation de votre collectivité/réserve ?**

( ) Ne sais pas **PASSEZ À LA QUESTION 28.**
( ) Non **PASSEZ À LA QUESTION 28.**
( ) Oui
Dans l'affirmative, veuillez indiquer le nombre de sociétés et expliquez la nature des processus de consultation.

28. **Actuellement, la société a-t-elle mis sur pied des processus d'information et de consultation avec votre collectivité/réserve ?**
( ) Ne sais pas **PASSEZ À LA QUESTION 29.**
( ) Non **PASSEZ À LA QUESTION 29.**
( ) Oui
Dans l'affirmative, veuillez indiquer combien de sociétés et expliquez la nature des processus de consultation.

29. **Avant le commencement de l'activité minière, la/les société(s) minière(s) visée(s) ont-elles conclu une entente de mise en valeur/socio-économique avec les membres de votre collectivité/réserve et(ou) avec le gouvernement ?**
( ) Ne sais pas **PASSEZ À LA QUESTION 31.**
( ) Non **PASSEZ À LA QUESTION 31.**
( ) Oui
Dans l'affirmative,
a. Pourquoi une entente a-t-elle été négociée ?
( ) Ne sais pas
( ) Exigée par le gouvernement
( ) Volontaire
b. Qui sont les signataires à l'entente ? Cochez la/les réponse(s) appropriée(s).
( ) La collectivité/réserve
( ) La société minière
( ) Le gouvernement fédéral
( ) Le gouvernement provincial
( ) Autre(s) (Précisez)
c. A votre connaissance, quelles sont les principales obligations de chacun des signataires ?

30. **S'il existe une entente de mise en valeur/socio-économique, jusqu'à quel point a-t-elle été efficace ?**

31. **Est-ce que l'une ou l'autre des sociétés a envisagé ou négocié une association commerciale, une entreprise en participation ou d'autres ententes financières avec les autochtones ou les entreprises locales appartenant à des autochtones ?**
( ) Ne sais pas **PASSEZ À LA QUESTION 32.**
( ) Non **PASSEZ À LA QUESTION 32.**
( ) Oui
Dans l'affirmative, veuillez élaborer.

32. **Veuillez énumérer les principaux avantages qui découlent de la mise en valeur précisée des projets miniers pour les membres de votre collectivité/réserve.** Cochez la/les réponse(s) appropriée(s).

( ) Aucun avantage pour la collectivité/réserve
PASSEZ À LA QUESTION 33.
( ) Amélioration de la qualité de vie
( ) Possibilités d'emploi
( ) Formation et perfectionnement des compétences polyvalentes
( ) Propositions d'affaires locales
( ) Injection d'argent au sein de la collectivité
( ) Appui pour la poursuite des activités traditionnelles
( ) Influence accrue au chapitre de la mise en valeur locale
( ) Par l'entremise d'une participation financière
( ) Par l'entremise d'une réglementation
( ) Services de transport améliorés
( ) Services aériens
( ) Routes ouvertes à l'année longue
( ) Routes d'hiver
( ) Fournitures moins coûteuses
( ) Communications améliorées
( ) Autre(s) (précisez)

33. **Dans le cas des particuliers, veuillez déterminer les principaux coûts de la participation à l'exploitation minière.** Cochez la/les réponse(s) appropriée(s).

( ) Aucun coût **PASSEZ À LA QUESTION 34.**
( ) Perte de la capacité d'exercer les activités traditionnelles
( ) Problèmes de santé accrus
( ) Problèmes sociaux accrus
( ) Problèmes familiaux accrus
( ) Autre(s) (précisez)

34. **Veuillez déterminer les principaux coûts que représente l'exploitation minière pour votre collectivité/réserve.** Cochez la/les réponse(s) appropriée(s).

( ) Aucun coût pour la collectivité/réserve
PASSEZ À LA QUESTION 35.
( ) Coûts environnementaux
( ) Pollution de l'eau
( ) Pollution de l'air
( ) Pollution du sol/pollution souterraine
( ) Autre(s) (précisez)
( ) Problèmes liés à la poursuite des activités traditionnelles
( ) Perte de la faune
( ) Modification des cycles migratoires de la faune
( ) Perturbation des sentiers de piégeage
( ) Autre(s) (précisez)

35. **La société minière a-t-elle été informée des répercussions négatives déterminées aux questions 33 et 34 ?**
( ) Non **PASSEZ À LA QUESTION 36.**
( ) Oui
Dans l'affirmative,
a. Laquelle des répercussions négatives précisées à la question précédente a été discutée avec la société ?
b. Est-ce que la société a tenté de trouver une méthode pour atténuer les répercussions négatives de ses activités ?
( ) Non **PASSEZ À LA QUESTION 36.**
( ) Oui
Dans l'affirmative, veuillez élaborer.

36. **Comment les membres de votre collectivité/réserve se sentent-ils face à la participation des autochtones à l'industrie minière et aux activités qui y sont associées?**

37. **Veuillez déterminer les principaux facteurs qui contribueraient à un niveau plus élevé de participation autochtone à l'exploitation minière et aux activités connexes.** Cochez la/les réponse(s) appropriée(s).
( ) Aucun facteur principal **PASSEZ À LA QUESTION 28.**
( ) Collectivités autochtones à proximité du projet
( ) Niveau plus élevé d'études et de compétences des autochtones
( ) Accès accru aux études/formation
( ) Politiques gouvernementales
( ) Programmes gouvernementaux
( ) Politiques des entreprises
( ) Procédures d'embauche des sociétés
( ) Exigences syndicales
( ) Compréhension des activités minières par la collectivité
( ) Possibilité accrue d'une participation autochtone aux entreprises en participation ou à d'autres types d'investissement
( ) Autre(s) (précisez)

38. **Si vous désirez apporter d'autres commentaires ou si un sujet a été omis, veuillez élaborer ci-dessous.**

ANNEXE H

ANALYSE DES RÉSPONSES AUX QUESTIONNAIRES SUR LA PARTICIPATION DES AUTOCHTONES À L'INDUSTRIE MINIÈRE

ANNEXE H

ANALYSE DES RÉPONSES AUX QUESTIONNAIRES SUR LA PARTICIPATION DES AUTOCHTONES À L'INDUSTRIE MINIÈRE

1. INTRODUCTION

Pour recueillir l'information et les opinions nécessaires à l'atteinte des objectifs de l'étude concernant la participation des autochtones à l'industrie minière, deux questionnaires distincts ont été élaborés (annexe G, addenda A, p. 121 et addenda B, p. 131).

Les questionnaires visaient en particulier à établir :

. les avantages et les coûts réels et perçus pour les autochtones et les sociétés de la participation des autochtones à l'industrie minière
. les obstacles réels et perçus à la participation des autochtones à l'industrie minière
. les façons dont les modes de vie traditionnels des autochtones peuvent être intégrés à une économie fondée sur la rémunération, et
. les façons dont les gouvernements, les sociétés, les groupes et les particuliers autochtones peuvent accroître la participation des autochtones à l'industrie minière.

La grande diversité des questions a permis au sous-comité d'analyser et d'examiner certains de ces objectifs. D'autres aspects de la question sont également ressortis. L'annexe G (p. 99) expose l'essentiel des données sur les coûts, les avantages et les obstacles liés à la participation des autochtones à l'industrie minière.

L'analyse des réponses aux questionnaires a permis de dégager les quatre grands thèmes suivants :

1. le niveau de participation des autochtones est directement lié à l'emplacement de la mine; il est susceptible d'être plus élevé dans le cas des mines situées dans des régions isolées (avec service de navette aérienne) que dans celles qui sont situées en milieu habité ou à proximité.

2. Les sociétés qui ont conclu des ententes à caractère socio-économique ont toujours réussi à attirer davantage d'autochtones dans leurs opérations et à être mieux acceptées par eux.

3. Les autochtones sont d'avis que la plupart des sociétés minières pourraient faire mieux sur le plan des

communications. L'amélioration des communications pourrait déboucher sur une meilleure acceptation de l'exploitation minière de la part des autochtones et, du même coup, sur une augmentation des niveaux d'emploi.

4. Beaucoup d'autochtones ont déclaré qu'ils n'étaient pas particulièrement attirés par le travail dans une mine mais qu'ils seraient intéressés à mettre sur pied des entreprises de services aux exploitations minières. Cette ouverture constitue une occasion pour les sociétés minières d'accroître la participation des autochtones même si elle ne contribue pas à augmenter le nombre d'employés autochtones dans les mines.

2. EMPLACEMENT DES EXPLOITATIONS MINIÈRES

2.1 Exploitations minières en milieu isolé (avec service de navette aérienne)

Les exploitations minières en milieu isolé[8] présentent un certain nombre de caractéristiques qui contribuent à accroître le niveau de participation des autochtones. Ces caractéristiques peuvent être considérées comme des obstacles, des coûts ou des avantages selon le contexte dans lequel elles sont examinées. Mais quoi qu'il en soit, beaucoup plus d'autochtones acceptent de travailler dans des exploitations en milieu isolé que dans celles qui sont situées en milieu habité.

Caractéristiques des exploitations minières en milieu isolé :

. Emplacement

Sur le plan de la participation des autochtones, beaucoup de sociétés ont indiqué que le fait que leurs exploitations soient situées en milieu isolé joue à leur avantage. Les populations autochtones locales sont habituées à vivre dans leur milieu traditionnel et préfèrent ce mode de vie. Elles sont considérées par les sociétés minières comme une source fiable d'employés. Avec le temps, des collectivités autochtones locales constituent un bassin d'employés compétents. L'importance de ce réservoir de main-d'oeuvre qualifiée est soulignée par les observations d'un exploitant qui dit avoir établi une période de rotation plus longue, avoir assoupli sa politique en offrant aux autochtones des périodes d'emploi plus courtes. Cette politique novatrice a

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[8] Les exploitations en milieu isolé qui font appel à des modes de transport autres (p. ex. l'autobus) sont également désignées dans le présent document par les termes «exploitations avec service de navette aérienne».

aidé à maintenir à la hausse la participation des autochtones.

. Transport

Étant donné que les exploitations minières sont situées en région éloignée, les employés doivent être transportés par avion. Les autochtones constituent la source la plus rapprochée de main-d'oeuvre potentielle. La proximité de cette source de main-d'oeuvre a été identifiée par les exploitants comme étant un grand avantage économique. Dans certaines régions, il revient moins cher de desservir un certain nombre d'endroits rapprochés avec un petit appareil que d'utiliser un gros aéronef pour se rendre en un point de ramassage éloigné.

. Travail par rotation

Conscients des difficultés que présente le fait de travailler en région isolée, les sociétés minières font appel au concept du travail par rotation, régime en vertu duquel les employés font un séjour prolongé à la mine et y travaillent un plus grand nombre d'heures, pour ensuite bénéficier d'un congé prolongé. Ces rotations sont coûteuses pour les sociétés minières (de façon inversement proportionnelle à la période de travail), mais elles constituent un attrait indiscutable pour les autochtones. Beaucoup d'employés ont indiqué que le fait de pouvoir passer des périodes plus longues au cours de l'année loin de la mine (par opposition aux fins de semaine dans le cas des employés travaillant en milieu habité), leur permettait de gagner leur vie tout en continuant de pratiquer leur mode de vie traditionnel. Un certain nombre de sociétés offrent même à leurs employés autochtones des périodes de travail par rotation plus courtes que celles qu'ils offrent aux autres travailleurs. Cependant, les autochtones ont indiqué que le fait d'être séparés de leur famille constitue l'un des principaux obstacles au travail en région isolée.

2.2 Exploitations minières en milieu habité

Les caractéristiques des exploitations en milieu habité sont très différentes de celles des exploitations en milieu isolé. D'ailleurs, nombre d'entre elles ont été identifiées comme des obstacles à l'atteinte des niveaux élevés de participation autochtone que connaissent les exploitations en milieu isolé.

Caractéristiques des exploitations minières en milieu habité :

. Horaire de travail

Dans une exploitation en milieu habité, l'horaire de travail est fonction de l'emplacement et de la composition de la main-d'oeuvre. Ces exploitations fonctionnent généralement par équipe de travail sur la base d'une semaine de 40 heures, 52 semaines par année. Cet arrangement est peut-être des plus pratiques pour la main-d'oeuvre non autochtone locale mais il n'offre pas aux employés autochtones les périodes de temps nécessaires à la pratique de leur mode de vie traditionnel.

. Emplacement

Ces exploitations sont situées dans les centres habités ou près de ceux-ci, ce qui représente un net avantage pour l'exploitant qui peut compter sur une main-d'oeuvre qualifiée près de ses installations. Cependant, les répondants des collectivités autochtones et des réserves ont indiqué très clairement que la nécessité de devoir déménager dans ces grandes collectivités constituait un obstacle. Parmi les raisons invoquées, notons l'incapacité de pratiquer un mode de vie traditionnel et les problèmes d'adaptation à une culture différente.

. Transport

Un certain nombre d'autochtones qui ont répondu aux questionnaires ont indiqué que le fait de devoir assumer le coût de leur transport pour se rendre à la mine (dans la plupart des cas) et en revenir constitue un obstacle à leur participation aux exploitations en milieu habité.

3. ENTENTES À CARACTÈRE SOCIO-ÉCONOMIQUE

La majorité des sociétés minières en milieu isolé et quelques sociétés minières en milieu habité ont conclu des ententes à caractère socio-économique dans le but d'attirer le plus possible d'autochtones. En règle générale, les sociétés qui ont conclu de telles ententes entretiennent des relations harmonieuses avec les collectivités autochtones locales. Cependant, l'examen des taux d'activité montre que ces ententes ont été beaucoup plus efficaces dans le cas des sociétés minières installées en milieu isolé que pour celles situées en milieu habité. Il semble que ces facteurs ont un impact quand vient le moment de déterminer l'efficacité d'une entente socio-économique à assurer des niveaux élevés de participation des autochtones.

4. COMMUNICATIONS

Même si plusieurs sociétés minières ont déclaré beaucoup communiquer avec les aborigènes locaux, l'impression générale dans les collectivités et les réserves est que les sociétés ne les tiennent pas suffisamment informées de ce qui se passe. Un répondant a précisé que sa collectivité avait établi des communications avec la société minière plutôt que d'attendre que celle-ci fasse les premiers pas.

Un certain nombre de collectivités ou de réserves ont indiqué que la société minière avait, au moment de son implantation, négligé de les informer de ce qu'elle se proposait de faire dans leurs terres traditionnelles ou près de celles-ci. Si la société les avait informées de ses intentions, les gens de l'endroit auraient compris ce qui se passait et auraient vraisemblablement appuyé la société lors des audiences publiques ou des audiences sur la réglementation. L'opposition des collectivités locales peut entraîner des retards inutiles ainsi que des coûts additionnels de mise sur pied. Au moment où les questionnaires ont été distribués, une collectivité a signalé qu'une société s'apprêtait à s'installer dans la région immédiate, mais qu'elle ne l'avait pas encore informée.

Bien qu'il soit essentiel que les collectivités ou les réserves soient informées des intentions d'une société au tout début de son implantation, beaucoup de répondants ont indiqué que le maintien de bonnes communications tout au long de la durée du projet était tout aussi important.

Un certain nombre de collectivités qui ont répondu au questionnaire ont aussi indiqué ne pas avoir été suffisamment informées des occasions d'emploi à la mine. Par conséquent, il n'y a rien d'étonnant qu'un certain nombre de sociétés aient indiqué ne pas avoir reçu beaucoup de demandes d'emploi. Les sociétés ont interprété cette abstention comme un manque d'intérêt à l'égard de l'industrie et ont indiqué qu'il s'agissait d'un obstacle à l'accroissement de la participation des autochtones.

Le peu de connaissances qu'ont dit avoir les répondants autochtones des aspects plus larges d'une exploitation, comme les ententes à caractère socio-économique, les syndicats, la formation interculturelle ou les programmes de formation offerts par l'entreprise, dénote aussi un manque de communications. Beaucoup de répondants autochtones ont indiqué qu'une meilleure présentation de l'industrie minière à la collectivité permettrait d'accroître la participation des autochtones.

5. OCCASIONS D'AFFAIRES POUR LES AUTOCHTONE

Même si les réponses que les collectivités ou les réserves ont fournies laissent croire qu'elles connaissaient les possibilités d'emploi offertes par l'industrie minière, nombre d'autochtones préféreraient pouvoir collaborer avec l'industrie en lui fournissant des services par l'intermédiaire de leurs propres entreprises.

La totalité des sociétés minières installées en région isolée ont indiqué avoir conclu des marchés avec des entreprises appartenant à des autochtones. Par contre, seulement la moitié des sociétés minières des milieux habités ont indiqué avoir conclu de tels marchés. Le désir de collaborer davantage avec les petits entrepreneurs constitue une occasion pour les sociétés minières installées en milieu habité (et les sociétés minières en milieu isolé) d'accroître la participation des autochtones.

6. CONCLUSIONS

La principale conclusion de l'étude est que - **c'est faisable** -, c'est-à-dire qu'il est possible d'accroître le niveau de participation des autochtones à l'industrie minière. Les sociétés qui ont déployé des efforts en ce sens ont obtenu des résultats très concluants. Certaines collectivités se sont dites satisfaites du niveau de participation atteint tant sur le plan de l'emploi direct que sur celui de la prestation de services par les petites entreprises autochtones.

D'une part, dans le cas des exploitations avec service de navette aérienne, les exploitants sont financièrement incités à avoir un niveau élevé de participation autochtone. Par contre, dans le cas des exploitations en milieu habité, il existe indéniablement des obstacles à l'atteinte d'un niveau élevé d'emplois autochtones. Cependant, toutes les sociétés minières pourraient accroître le niveau de participation des autochtones en améliorant leurs communications, en concluant des ententes à caractère socio-économique avec eux et en passant davantage de marchés avec les entreprises autochtones.

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48TH ANNUAL MINES MINISTERS' CONFERENCE

Report on the Cleanup of Abandoned Tailings Through Reprocessing Operations

Federal

HALIFAX, Nova Scotia
September 22-24, 1991

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REPORT ON THE CLEANUP OF ABANDONED TAILINGS THROUGH REPROCESSING OPERATIONS

BY THE

INTERGOVERNMENTAL WORKING GROUP
ON THE MINERAL INDUSTRY

PREPARED FOR
THE MINES MINISTERS' CONFERENCE
HALIFAX, NOVA SCOTIA

September 1991

Energy, Mines and Resources Canada
Énergie, Mines et Ressources Canada

FOREWORD

This discussion paper has been prepared by the Intergovernmental Working Group on the Mineral Industry (IGWG) in response to a commitment made at the 1990 Mines Ministers' Conference to "examine a broad range of measures including research and development to encourage the cleanup of abandoned tailings through reprocessing operations."

Traditionally, tailings reprocessing projects have been driven by the profit motive and the opportunities created by improvements in mineral processing technology or by increased prices for mineral products. More recently, tailings reprocessing projects have been instigated or proposed as a cost effective technique for the remediation of pollution problems such as acid drainage, toxic metal and salt contamination.

This report reviews tailings reprocessing practices, problems and potential throughout Canada, and also includes some examples of foreign tailings reprocessing practices and policies.

EXECUTIVE SUMMARY

Problems Associated With Mine Waste Products

The mining industry in Canada produces nearly 2 million tonnes per day of tailings and other wastes such as overburden, broken rock, smelter slags and fly ash.

The value of these mineral wastes is low. There is usually no possibility of further commercial exploitation of these wastes because they are typically located in areas remote from urban centres.

Environmentally acceptable storage and reclamation of large volumes of mineral waste is expensive, but current mine operators have accepted responsibility for postclosure reclamation of their mine sites.

Many old abandoned mineral wastes are inadequately stored and result in pollution of the surrounding air, water and soil or the possibility of a catastrophic failure.

Practical Aspects of Reprocessing Mine Tailings

Improvements in the technology of mineral extraction or increases in the price of a mineral commodity may make it economically attractive to reprocess some mine tailings or other mine waste dumps. This may provide an opportunity to store the residual waste products in a manner that prevents degradation of the environment.

A review of several recent and proposed mine waste retreatment projects in Canada and elsewhere revealed that:

(a) the reduction of the amount of tailings is generally very small, from 0.0001 percent for gold tailings to 15 percent for the proposed production of magnesium from asbestos tailings;

(b) environmental improvements were generally small;

(c) in some cases environmental degradation has been caused by technical or financial failure of the tailings reprocessing operation; and

(d) because the reduction in quantity of tailings is small, the environmental benefits of tailings reprocessing usually accrue from improved methods of impounding the residual waste products.

A review of the various sectors of the mining industry concludes that tailings reprocessing operations are theoretically possible for every type of mining operation in Canada. Research and development of new processing technologies will enhance the potential for economic reprocessing of mine wastes.

The Role of Government in Tailings Reprocessing

In Canada, jurisdictional authority for the control and management of mineral resources within the provinces resides primarily with the provincial governments. However, the federal government has environmental responsibilities that overlap those of the provinces in the area of controlling discharges from mines into the environment. Within the Yukon Territory and the Northwest Territories, jurisdictional authority for mining and environmental protection rests with the federal government, although it may devolve to the territorial governments at some future date.

For the purposes of the Income Tax Act, tailings are considered to be an inventory of ore from a mineral resource. This means that work done to define the quality and quantity of tailings at a site will not qualify as Canadian exploration expense, but profits from a tailings reprocessing operation will be eligible for the resource allowance.

Some foreign governments offer grants or subsidies for tailings reprocessing projects. A levy on current producers to finance reclamation of abandoned mine sites, such as the Superfund in the United States, is perceived by the mining industry to unfairly penalize current mine operators by forcing them to pay to rectify problems created by the activities of previous generations of miners.

Refinement of the regulations governing mine reclamation, abandonment and performance bonds would probably result in better storage and treatment of tailings and other wastes at existing operations and improved designs for waste handling in future operations.

In the case of abandoned tailings deposits, where the title has reverted to the Crown or the responsible company may not have sufficient assets to finance remediation, the Crown may be responsible for the costs of mine reclamation.

Without mineral processing technologies that offer a significant improvement in recovery compared to the technology utilized in the original rejection of the tailings, there is little or no potential for a commercially viable tailings reprocessing operation. This truism is well recognized by governments and the private sector, and both have actively supported mineral processing research in the form of individual and cooperative projects. The examples presented in section 3.3 suggest that investment in mineral processing research may be the most cost effective of all the initiatives available to governments.

Conclusions

Recent tailings reprocessing operations in Canada and abroad have ranged from brilliant successes, producing significant profits and environmental benefits, to dismal failures causing bankruptcies and additional degradation of the environment.

The quantity of residual tailings that remains to be stored after a tailings reprocessing operation is usually very nearly the same as the quantity of the original tailings deposit.

The reprocessing of an abandoned mine tailings deposit will be of benefit to the environment if it extracts a hazardous component or if the residual tailings are stored in an impoundment that is environmentally superior to the original impoundment.

Tailings reprocessing operations sometimes require toxic chemicals, which were not present in the original tailings, to be added to the residual tailings.

In the case of most of the tailings deposits that currently pose major environmental hazards, it may be more cost effective to undertake remedial work to improve the integrity of the present impoundment and containment structures and to control the release and migration of contaminants rather than to reprocess the tailings.

Successful tailings reprocessing requires mineral processing technology that is significantly more effective and efficient than the technology used when the original tailings were deposited. This means that, in many cases, private sector and government support for mineral processing research and development will provide the most effective encouragement for the reprocessing of abandoned tailings.

Contents (cont'd) **Page**

3.2 The Potential for Reprocessing of Mine Tailings 20

3.2.1 Base Metal Mines 20
3.2.2 Coal Mines 20
3.2.3 Precious Metal Mines 22
3.2.4 Uranium Mines 23
3.2.5 Oil Sands 23
3.2.6 Iron Ore Mines 25
3.2.7 Asbestos Mines 25
3.2.8 Potash Mines 26
3.2.9 Other Industrial Minerals 27

3.3 Research and Development Initiatives 28

3.4 Effectiveness of Tailings Reprocessing as an Environmental Cleanup Measure 29

4. The Role of Government in Tailings Reprocessing 30

4.1 Tax Measures 30

4.2 Other Fiscal Measures 30

4.3 Regulations 30

4.4 Levy on Current Producers 31

4.5 Research and Development Assistance 31

4.6 Technology Transfer 32

5. Conclusions 32

Bibliography 33

TABLE OF CONTENTS

		Page
1.	Introduction	1
1.1	The Problem of Environmentally Hazardous Mine Wastes: A Public Policy Issue Demanding Attention	1
1.2	Background and Recent Developments	1
1.3	Thrust and Organization of the Report	1
2.	Problems Associated With Mine Waste Products	2
2.1	Nature and Dimensions of the Mine Waste Problem	2
2.1.1	Mining and Mineral Processing Wastes	2
2.1.2	Waste Rock	9
2.1.3	Mill Tailings	9
2.1.4	Smelter Slags	9
2.1.5	Fly Ash	9
2.1.6	Dimensions of the Reclamation Problem	10
2.1.7	The MEND Program	11
2.1.8	Potential and Prospects	11
2.2	Environmental Hazards Associated with Mine Wastes	12
2.2.1	Air Pollution	12
2.2.2	Water Pollution	12
2.2.3	Radioactive Emissions	12
2.2.4	Failure Hazards	12
2.3	Abandoned Tailings Sites	13
3.	Practical Aspects of Reprocessing Mine Tailings	13
3.1	Recent Canadian Examples of Actual or Proposed Tailings Reprocessing Projects	13
3.1.1	Recent Foreign Examples of Actual or Proposed Tailings Reprocessing Projects	14

2. PROBLEMS ASSOCIATED WITH MINE WASTE PRODUCTS

2.1 Nature and Dimensions of the Mine Waste Problem

During 1990, the mining industry in Canada produced ore at a rate of almost one million tonnes per day. The amount of tailings resulting from the processing of these ores was only slightly less at about 950 000 tonnes per day. The amount of waste rock produced was also about one million tonnes per day. These wastes are costly to dispose of and to maintain in waste dumps. Furthermore, they can result in pollution of ground-water, surface water, soil and air in the immediate vicinity.

2.1.1 Mining and Mineral Processing Wastes

Mining and mineral processing wastes are composed of several principal types: overburden; waste rock from open pits or from development work in underground mines; coarse mill rejects from screening or heavy media separation processes; and fine rejects or mill tailings from screening, magnetic separation, and flotation processes.

Table 1 presents a simple classification of mineral wastes together with examples showing their current and potential uses.

Although mineral waste varies widely in composition from mine site to mine site, material from any one plant or location normally would have relatively uniform physical and chemical characteristics.

Many waste accumulations have limited value as sources of raw mineral material because of high impurity content, remote location, or both. However, some are favourably located and of interest because of contained metals and minerals or because of inherent physical and chemical characteristics. From the standpoint of reuse, mining wastes may readily be divided into two main categories:

(a) those of interest because of contained minerals or metals that are potentially recoverable, such as copper, gold or silver and,

(b) those of interest as raw material for the manufacture of consumer products or in various applications, for example, for brick and block, as aggregate in concrete, and as soil additives and mineral fillers.

The reuse of wastes in Category 1 depends on the assay values of the copper, gold, or silver and whether or not these metals can be economically recovered.

Reuse of the wastes noted in Category 2, however, to a large degree depends on the inherent physical and chemical characteristics of the waste. The successful use of these wastes for specific applications will depend on established and satisfactory performance or upon their meeting identified physical and performance standards.

Tables 2 to 6 describe current or potential applications for wastes from Canadian mining operations.

1. INTRODUCTION

1.1 The Problem of Environmentally Hazardous Mine Wastes: A Public Policy Issue Demanding Attention

Any intensive use of the earth's resources carries with it the potential for adverse environmental consequences. Mining is no exception. In Canada, mining and mineral processing operations produce about 650 million tonnes per year of wastes. This amount is added each year to the billions of tonnes of old mining and mineral processing wastes accumulated over the years and scattered around the country.

Adopting a sound regulatory approach to new and operating mines will do much to avoid future reclamation problems. Past practices have left a legacy of abandoned sites that pose serious environmental risks in the form of acid mine drainage that could result in pollution of groundwater and water in nearby lakes and rivers.

In addition, failures of tailings dams could pose serious environmental problems. A spill of gold mine tailings into the Montreal River near Matachewan, Ontario in October 1990 was such an example. Incidents such as these reinforce the public perception that abandoned mine sites and tailings dumps pose serious ecological problems and that they must be rectified.

1.2 Background and Recent Developments

The 1988 "Report on the Economic and Policy Aspects of Acid Discharge" prepared by an IGWG/Industry subcommittee on mine waste concluded that: "There is an urgent need for measures to deal with the reclamation of abandoned mine sites."

Some IGWG members have argued that there could be a case for government incentives for the promotion of tailings reprocessing in the case of abandoned tailings, on the basis that reprocessing operations may lead to improvements in environmental quality.

1.3 Thrust and Organization of the Report

The current report examines the reprocessing potential of abandoned tailings and the extent to which reprocessing is a means to improve environmental quality.

Chapter two of the report broadly describes the generic mine waste problem and the associated environmental hazards.

Chapter three reviews cases of reprocessing projects, both domestic and foreign. It also discusses the potential for reprocessing of tailings resulting from the mining and processing of deposits of base metals, precious metals, industrial minerals (including potash and asbestos), uranium, coal, and oil sands. The extent to which reprocessing promotes environmental enhancement is examined.

Chapter four discusses possible initiatives to encourage reprocessing of mine tailings and considers the legal, fiscal, jurisdictional and economic issues and constraints that must be taken into account.

Finally, Chapter five presents the conclusions and recommendations developed in this report.

TABLE 1. MINERAL WASTE CLASSIFICATION

	Primary Wastes		Secondary Wastes
	Mine Rock	Mill Tailings	Metallurgical Slags and Dusts
Origin and Description	Rock that has been broken and removed to uncover ore for subsequent mining. Accumulations are large, especially at many open-pit mines. Collectively this material is composed of a wide variety of rock types.	Rejects from mineral beneficiation and processing operations. Material from individual operations is usually homogenous in composition and consists of rock forming minerals but may include sulphides, e.g. pyrite and pyrrhotite, and traces of other metallic minerals. Rejects are normally of uniform size. Those from coarse screening or heavy media plant may vary from 10 cm to 1 cm or less in size; flotation tailings are usually minus 150 μm.	Slags, cinders, dusts and sludges from metallurgical plants and from foundries, fly ash and bottom ash from coal-fired power plants, cement and lime kiln dusts. Material from individual operations is usually uniform in composition and size. Size of separate waste types varies widely, from 30 cm or more down to dust.
Examples	Granite, trap rock, syenite, limestone from open-pit iron ore mines.	Pyrrhotite-feldspar-quartz mill tailings from nickel-copper flotation, quartz-feldspar tailings from gold ore processing, serpentine tailings from asbestos mills, carbonate-silicate tailings from niobium oxide recovery plants, salt from potash recovery operations.	Blast and steel furnace slags, copper-nickel slags, fly ash, cement and lime dusts.
Current or Potential Use	Mine backfill, roadfill, landscaping, for production of railroad ballast and construction aggregate.	Potential source of additional metals and minerals, and of raw material for the manufacture of bricks and blocks, for production of thermal insulation, as a soil additive and as a mineral filler in various products. Some tailings are used in mine backfill operations.	Some wastes are suitable as road base material, as aggregate in asphalt pavement, as light- and heavy-weight aggregate in concrete, as pozzolanic additives in concrete and as a soil additive.

TABLE 2. APPLICATIONS FOR WASTES FROM NONFERROUS BASE-METAL MINING OPERATIONS

Company	Metal	Waste - Current or Potential Use
General	copper, lead, zinc, nickel	rock: variable size and composition tailings: finely ground, 75% minus 150 µm, wide variety of rock forming minerals, usually with significant amounts of metallic sulphides (pyrite, pyrrhotite, and others)
Newfoundland Zinc Mines Ltd. Daniel's Harbour, Nfld.	zinc	tailings: chiefly dolomite; have been used experimentally to reduce soil acidity
Concolidated Durham Mines Ltd., Prince William, N.B.	antimony	tailings: chiefly quartz; potential use as sandblast and foundry molding sand
Inco Metals Co., Thompson, Man.	nickel, copper	rock: chiefly quartzite, some use as railroad ballast
Tantalum Mining Corp. of Canada Ltd., Bernic Lake, Man.	tantalum, cesium, lithium	rock: chiefly quartz, mica, feldspar; minor use as a decorative stone for landscaping tailings: chiefly feldspar, quartz, mica; potential source of high-quality feldspar for ceramics
Cominco Ltd., Kimberley, B.C.	zinc, lead	rock: chiefly siliceous argillite; float from sink-plant is used as railroad ballast, (350 000 tonnes per year, plus 20 mm), and for road construction
Princeton Mining Corp. Princeton, B.C.	copper	rock: chiefly volcanics; dense, homogenous with fine-grained sulphides; used locally by Dept. of Highways in road construction; of potential use in building products and as oil absorbent

TABLE 3. APPLICATIONS FOR WASTES FROM PRECIOUS-METAL MINING OPERATIONS

Company	Metal	Waste - Current or Potential Use
General	gold, silver	rock: variable size and composition tailings: finely ground, 80% minus 150 µm, usually with high percentage of quartz, with other silicates, carbonates, and so on; low metallic sulphide content (pyrite, pyrrhotite)
Agnico-Eagle Mines Ltd., Cobalt, Ont.	silver	rock: intermediate volcanics or sediments that have undergone a degree of change in mineral or chemical composition through metamorphism; chiefly used as landfill and as railroad ballast
Dome Mines Ltd., South Porcupine, Ont.	gold	tailings: chiefly quartz and feldspar; possible use in brick and block manufacture

TABLE 4. APPLICATIONS FOR WASTES FROM IRON MINING OPERATIONS

Company	Waste - Current or Potential Use
General	rock: variable size and composition tailings: usually finely ground, 60 to 90% minus 150 μm, but may be coarser depending on processing; wide variety of rock-forming minerals including significant amounts of metallic oxides and sulphides
Hilton Mines Ltd., Shawville, Que.	rock: chiefly granites; used as railroad ballast (500 000 tonnes per year, minus 40 to plus 20 mm) as aggregate in concrete, and in general construction applications; a study of the use of minus 20 mm rock and tailings in concrete railroad ties is in progress tailings: chiefly actinolite and calcite; studies by CANMET indicate that this material is satisfactory for dry-pressed, fired-brick manufacture
Iron Ore Company of Canada, Schefferville and Seven Islands, Que.	rock: low-grade iron formation (40% iron, 30% silica); used as railroad ballast tailings: chiefly quartz and clay; potentially of interest as paint pigment and in the manufacture of ceramics
Quebec Cartier Mining Co., Seven Islands, Que.	tailings: chiefly quartz (88%) and hematite (11%); minor use as aggregate in concrete and asphalt
Quebec Iron and Titanium Corp., Tracy, Que.	tailings: chiefly plagioclase and ilmenite; current source of roofing granule material remainder useful as aggregate or filler in asphalt and concrete
Cliffs of Canada Ltd., Temagami, Ont.	rock: chiefly iron silicates, feldspar, mica; bulk is used in road and dike construction, possible use as railroad ballast
Marmoraton Mining Co., Marmora, Ont.	rock: chiefly limestone, syenite, traprock; traprock is used as aggregate in asphalt mixes, possible use of separate rock types as construction aggregate and as aggregate in concrete tailings: chiefly limestone and syenite (40% calcium oxide, 40% silica); possible use in the manufacture of dry-pressed, fired brick

TABLE 5. APPLICATIONS FOR WASTES FROM INDUSTRIAL MINERAL MINING OPERATIONS

Company	Mineral	Waste - Current or Potential Use
General		rock: variable size and composition tailings: most industrial mineral mines do not produce large amounts of tailings (exceptions are potash and asbestos); where produced, tailings usually are finely divided, of uniform composition and substantially free of metallic sulphides
Asbestos mines, Eastern Townships, Que.	asbestos	tailings: chiefly nonfibrous serpentine and associated minerals (40% magnesia, 40% silica); currently used as road fill and in asphalt, potentially useful for the manufacture of brick, mineral wool and in fertilizer
Baker Talc Ltd., South Bolton, Que.	talc	tailings: chiefly ferruginous magnesite and talc; potentially useful as inert mineral filler, as a coating on fertilizer prills to prevent sticking and to add magnesium to soil
St. Lawrence Columbium and Metals Corp., Oka, Que.	columbium oxide	tailings: chiefly calcite and quartz; potentially useful as mineral filler, as soil additive and neutralizer, and as neutralizer for acid effluents
Indusmin Ltd., Midland, Ont.	silica	tailings: quartz (99% silica); used as additive in autoclave concrete block, potential use as filler in paint and plastics and in sand-lime-brick manufacture
Minnesota Minerals Ltd., Havelock, Ont.	traprock	tailings: chiefly trap rock (45% silica, 22% alumina); potential use as filler in asphalt and for mineral wool manufacture
Baroid of Canada Ltd., Spillimacheen, B.C.	barite	tailings: chiefly shale and dolomite; suitable as fill in road construction and maintenance
Ideal Basic Industries, Vananda, B.C.	limestone	waste rock: chiefly dike rock from limestone quarry, also process rock waste from previous iron mining operation; markets include road fill, riprap, and aggregate uses, 100 000 tonnes per year
Sherbrooke University, Sherbrooke, Que.	dolomitic limestone	tailings: screenings from aggregate plant at St. Eustache; used in asphalt and as landfill, current studies on use in high-strength concrete

TABLE 6. APPLICATIONS FOR WASTES FROM COAL MINING OPERATIONS

Company	Waste - Current or Potential Use
General	rock/tailings: rejects vary in size from 100 mm or larger to very fine material, high percentage of clay and shale with variable amounts of coal
Cape Breton Development Corp., Victoria Junction plant, Sydney, N.S.	rock: shale, sandstone pyrite; small amounts have been used in portland cement and, experimentally, for lightweight aggregate manufacture
Coleman Collieries Ltd., Coleman, Alta.	tailings: chiefly shale; rejects from wash plant useful as roadbed material and in dam construction
Fording Coal Ltd., Elkford, B.C.	rock: sandstone, siltstone, mudstone; used in road and dike construction, of potential interest for manufacture of lightweight aggregate tailings: potential feedstock for thermal electricity generating station

2.1.2 Waste Rock

Waste rock is extensively used locally as mine or open-pit backfill, in road construction and maintenance, and on occasion, as aggregate in concrete and as railroad ballast. Local use by a mining company seldom requires that the waste meet specific standards but rather is based largely on satisfactory in-service performance. However, if sold to a contractor for use in the construction of major highways or as railroad ballast on major lines, then the material undoubtedly would be subject to established physical and chemical specifications.

2.1.3 Mill Tailings

As Tables 2 to 6 indicate, there are a number of current or potential commercial applications for Canadian mill tailings.

Mill tailings may be used locally as backfill in mines and in construction. With increasing interest in the potential use of mill tailings in applications such as brick and block manufacture, soil additive, and mineral filler material, the need for standards to govern the use of these materials is becoming increasingly evident.

2.1.4 Smelter Slags

Annual production of nonferrous smelter slags in Canada is estimated at 8 million tonnes. Most of it is derived from copper, nickel, zinc, or lead smelters at Murdochville and Rouyn-Noranda in Quebec, Sudbury, Falconbridge and Timmins in Ontario, Flin Flon and Thompson in Manitoba, and Trail in British Columbia.

These slags are normally disposed of as landfill, although nickel slag from the Sudbury area has been used for over 25 years as railroad ballast material. Copper slag from the Noranda and Flin Flon smelters has also been used for railroad ballast.

Dicalcium silicate slags resulting from the production of magnesium metal by the Pigeon process at Haley Station, Ontario have been studied as raw material for building products manufacture. Good quality building brick was produced by an autoclave process developed at CANMET.

Nonferrous slags also have been used as road base and fill material and as cemented backfill in underground mines.

2.1.5 Fly Ash

Fly ash is produced by the burning of coal to generate electricity at plants in Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan and Alberta.

Chemically, fly ash is a heterogeneous mixture of crystalline and amorphous compounds of silica, alumina and iron oxide with varying proportions of calcium oxide and other minor components. The composition of a particular ash is largely determined by the composition of the inorganic portion of the coal from which it is derived. Physically, fly ash particles are mostly spherical in shape and range in diameter from 1 to 150 μm.

Annual production of fly ash is in the order of 2 million tonnes, of which about 5 percent is used as a pozzolanic additive in concrete to replace part of the portland cement. Although use of fly ash in

concrete is increasing, total consumption for this purpose probably does not exceed 10 percent of the production of fly ash in any regional market.

Other uses of fly ash, including its application in the manufacture of lightweight aggregate and as a soil cement in highway construction, are being gradually developed.

The recovery of vanadium (1.4 percent) and nickel (0.7 percent) from fly ash resulting from the burning of coke recovered from the bitumen portion of the tar sands at Fort McMurray in Alberta has also been studied.

2.1.6 Dimensions of the Reclamation Problem

For policy purposes, reclamation problems can be divided into two categories:

(a) traditional or normal reclamation, where the waste and tailings are not reactive; and

(b) situations where waste materials contain sulphide mineralization and cause acid mine drainage (AMD).

Traditional or normal reclamation involves removal of all buildings, utilities and equipment, sealing of all openings, recontouring of excavations and spoil piles with appropriate drainage facilities and establishing a self-sustaining vegetation cover to prevent erosion and dust problems. Some of this work can be performed while the mine is operating with the balance after the close. Postclosure reclamation will generally be of short duration, say one to four years. Most of these activities are mining or civil engineering operations and their costs can be estimated quite accurately.

In the second case, reclamation is much more difficult and costly. It may require, in addition to the foregoing, the building of a system to contain or capture the AMD effluent and treat it. These facilities, when well operated and maintained, are generally sufficient to prevent harmful environmental impact downstream. However, acid generation may persist for hundreds of years following mine closure. The operation of treatment plants for such long periods of time is costly and clearly not desirable. To estimate the operating costs of these operations for such long periods of time with any degree of accuracy is, to say the least, difficult.

Therefore, alternative new technologies are needed to find permanent and economic solutions to the AMD problem. Recognizing this need, Canadian governments and industry set up a joint project, the Mine Environment Neutral Drainage (MEND), to coordinate research efforts in this area. The B.C. Acid Mine Drainage Task Force is another group coordinating research into the problems of acid drainage specific to British Columbia.

It has been estimated that acid generating wastes cover 15 000 hectares of land in Canada. In Ontario, 100 major abandoned mine sites were identified of which 20 pose an AMD problem. These 20 sites are estimated to contain 55 million tonnes of reactive sulphide tailings and cover a surface area of 830 hectares.

In Quebec, there are about 107 major abandoned mine sites and 21 of these sites, covering an estimated area of 4500 hectares, have been classified as hazardous waste sites because of acid drainage. The province of British Columbia has about 72 million tonnes of acid generating tailings, or about 4 percent of the total in Canada. However, there are also about 250 million tonnes of

acid generating waste rock (80 percent of the Canadian total) which is increasing by about 25 million tonnes per year.

2.1.7 The MEND Program

The MEND program was established in 1988 to develop technologies to prevent and control AMD. This means researching the processes responsible for generating acidic drainage and determining techniques for controlling it. The Canada Centre for Mineral and Energy Technology (CANMET) is a major participant in the five-year, $12.5 million project, which also involves the Canadian mining industry, Environment Canada, Indian and Northern Affairs Canada, and the provinces of British Columbia, Manitoba, Ontario, Quebec and New Brunswick, where most of Canada's sulphide minerals are mined. MEND research activities focus on prediction, prevention and control, treatment, monitoring, technology transfer and international liaison. Activities include:

(a) the development of improved methods for predicting and modelling acid generation from wastes containing sulphides;

(b) the evaluation of various technologies to reduce or prevent the weathering of tailings; and

(c) the application of chemical, biological and other processes for treating AMD, capturing heavy metals and stabilizing sludges from existing lime plants.

2.1.8 Potential and Prospects

Although virtually all of Canada's mineral wastes will never have commercial value, there are some that could have value as alternate or supplemental sources of mineral raw material, particularly in traditional nonmetallic or industrial mineral markets. Interest in such wastes is growing and will continue to grow as higher quality and more readily accessible mineral deposits are mined to exhaustion or where, as in some urban centres, quarrying is restricted by local regulations.

Waste utilization is an attractive alternative to disposal in that disposal costs and potential pollution problems are reduced or even eliminated and resources are conserved. Technical and economic constraints severely limit the use of some mineral wastes. Distance from potential markets, quantity and quality of material available, ease of recovery, transportation costs, market demand and specifications all influence whether or not waste materials will be recovered and reused.

Energy considerations must also be taken into account and may be a positive factor in that these wastes are already mined and partially processed. In some instances it may be feasible to arrange low-cost bulk shipment of waste by boat or barge or, perhaps, to obtain more favourable rail rates through use of unit trains or backhaul arrangements.

Market specifications may require that the physical nature of the material (particle size or size distribution) be altered to meet a potential use or application, whereas chemical specifications for raw material for a particular use may be unnecessarily stringent. Thus, the producer may be obliged to undertake further processing, or the consumer may have to alter specifications to permit use of a particular waste material.

Most of the successful reprocessing projects recover only a small proportion of the total waste volume and therefore still have the problem of disposal of the remaining waste material. Because

current regulations governing the disposal of mine wastes are generally more stringent than those that applied at the time that the wastes were originally accumulated, there is an environmental benefit realized when these wastes are reprocessed, stored and reclaimed to modern standards of environmental protection. (Section 3.1).

Although interest in mineral waste is growing, such interest is tempered by the fact that there is little published information on the basic nature of these wastes or on their availability and potential utility. Specifications that could encourage a wider use of such wastes are lacking. A number of domestic and foreign organizations are promoting activities designed to fill this information gap: the Mineral Waste Utilization Symposia sponsored by the U.S. Bureau of Mines/Illinois Institute of Technology Research in Chicago; Ontario Research's Canadian Waste Materials Exchange; and CANMET's Mineral Waste report series.

2.2 Environmental Hazards Associated with Mine Wastes

2.2.1 Air Pollution

Wind blown dust from mine waste dumps and tailings deposits may contaminate the region immediately downwind (up to several kilometres) from the mine site. The composition of the dust will be site specific depending upon the geology and extraction processes utilized at the mine site, but it may contain elements that have been shown to be toxic in plants or humans such as Al, As, Be, Ca, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Th, W, V and Zn.

Waste gases from sulphide ore smelting operations contain sulphur oxides that, in the Sudbury and Wawa regions of Ontario, have been shown to affect vegetation as far as 30 kilometres away from the smelter site.

2.2.2 Water Pollution

As discussed above, mine waste dumps that expose sulphide minerals to air and water may generate acidic solutions containing heavy metals that are extremely toxic. If not contained or neutralized, these AMD solutions may contaminate the surface waters and groundwaters in the vicinity of the mine site. Waters draining from mine tailings deposits may be acidic, or contain toxic metals, or contain residues of process chemicals. If these waters are released into the environment without adequate treatment, they may cause widespread damage to aquatic flora and fauna.

2.2.3 Radioactive Emissions

Waste dumps, tailings deposits and ore stockpiles at uranium mines may be sources of radioactive emissions.

2.2.4 Failure Hazards

Failures of mine waste dumps may cause catastrophic deaths as in the 1966 coal mine waste dump failure at Aberfan, Wales, that inundated a primary school. The recent failure of a tailings dam near Matachewan, Ontario released sand and silt containing heavy metals into the Montreal River.

2.3 Abandoned Tailings Sites

The term "abandoned tailings site" is applied to any deposit of mine tailings that is no longer being actively worked. The tailings site may or may not have been subject to reclamation work prior to being abandoned. The abandoned tailings site may still be owned by an active mining company, or the property may have reverted to the Crown.

Ideally, an abandoned tailings site will have been reclaimed to an environmentally benign state prior to being abandoned. Unfortunately, many abandoned tailings sites have not been adequately reclaimed, and they are currently creating some or all of the environmental hazards described in Section 2.2 above.

The reclamation of an environmentally hazardous abandoned tailings site may be a large, difficult and expensive operation. In some cases reprocessing of the abandoned tailings has been proposed as a source of revenue, a portion of which would be used to pay for the expense of reclaiming the tailings to an environmentally benign condition.

It is estimated that there are more than 6000 abandoned tailings sites in Canada. At present we do not know what quantity of material is stored in these abandoned tailings sites or the degree to which they may be environmentally hazardous.

3. PRACTICAL ASPECTS OF REPROCESSING MINE TAILINGS

The purpose of this section is to consider the economic feasibility of reprocessing mine tailings.

3.1 Recent Canadian Examples of Actual or Proposed Tailings Reprocessing Projects

Table 7 presents data on eleven tailings reprocessing projects that were either placed into production or have been proposed for production within Canada in recent years.

Seven of these eleven projects were designed to recover gold, one to recover iron ore (magnetite), one to recover asbestos, one to recover lead and zinc and one to recover magnesium metal from asbestos tailings. Ten of these projects were designed to generate a profit, with environmental cleanup a secondary consideration. Four of the projects have been profitable, four are not yet into production, one is said to have covered operating costs only during its last year of operation, and two were commercial and environmental failures. The capital costs of these projects range from less than $1 million to more than $400 million.

Tailings reprocessing does not generally result in a major reduction in the quantity of tailings to be disposed of. In the case of gold mine tailings, the amount of material extracted (gold) in the reprocessing operation is approximately 0.0001 percent of the total weight of the tailings. The other 99.9999 percent of the tailings deposit remains as a potential environmental problem. However, if the reprocessed tailings are stored in an impoundment that is environmentally superior to the original tailings impoundment, then there will be some benefit to the environment.

The proposed Magnola project (Table 7d) is remarkable for the fact that it will reduce the quantity of waste material by about 15 percent.

The Eastmaque gold tailings reprocessing project (Table 7b) extracts gold by producing a flotation concentrate that is largely pyrite containing most of the gold values. This pyrite concentrate is trucked to the Horne smelter at Noranda. In this case, the removal of some of the potentially acid generating pyrite from the tailings impoundment at Eastmaque does in fact produce an environmental benefit.

A successful base-metal tailings reprocessing operation existed at the Craigmont copper mine at Merritt, B.C. from 1969 to 1983 (Table 7c). Magnetite (iron ore) was recovered from the copper mine tailings and sold to coal washing plants, which used the magnetite in heavy media sink/float separation techniques. One million tonnes of magnetite were recovered from approximately 35 million tonnes of tailings.

The proposal by Curragh Resources Inc. (Table 7d) to reprocess the tailings stored in the Rose Creek Valley at the Faro lead zinc mine has been submitted as part of the abandonment plan required as a condition of the water licence issued by the Minister of Indian and Northern Affairs. Approximately 40 million tonnes of tailings are estimated to contain lead, zinc and silver with a gross value of about $1.5 billion. These tailings are potentially acid generating and the cost of preventing AMD problems in the Rose Creek Valley has been estimated at about $29 million. The reprocessing of these tailings is part of a plan to move the tailings from the Rose Creek Valley, where they are deemed to pose an AMD problem, and to place them into the old Faro open pit where they will be stored underwater in an environmentally benign condition. The reprocessing is not expected to be profitable, but it is expected to generate sufficient revenue to cover the operating costs. To the extent that the project may serve to significantly reduce the ultimate cost of Curragh's remediation obligations it could be regarded as an economically viable proposal.

The addition of process chemicals to old tailings deposits may cause environmental degradation if not properly managed. Sumac Ventures Inc. (Table 7b) extracted gold by heap leaching old mine tailings. The operation was closed when waste management inspectors detected traces of cyanide leaking into peripheral test wells.

The reprocessing of old tailings deposits that had already been reclaimed and revegetated causes a temporary (i.e. several years) degradation of the environment. If the reprocessing operation is financially unsuccessful, as in the case of ERG Resources Inc. (Table 7a), and the necessary reclamation funds are not in place, there may be many years of dispute and litigation before the tailings deposit is restored to the same conditions that existed before the start of the reprocessing operation.

3.1.1 Recent Foreign Examples of Actual or Proposed Tailings Reprocessing Projects

Table 8 provides a partial listing of some 30 foreign tailings reprocessing operations that are currently in production. Eleven of these are in South Africa and nine are in Australia, both recovering gold. Lead and silver are recovered in Spain, copper, gold and silver are recovered in the United States and copper is recovered in Zambia.

The largest and most profitable tailings reprocessing operation in the world is probably that of East Rand Gold (ERGO) in South Africa. ERGO began treating old tailings from gold mines close to Johannesburg in 1976 and extracts gold, silver, uranium and pyrite. The pyrite is made into sulphuric acid that is sold. This reduces the potential for the generation of acid drainage from the tailings. The current impoundment area for the residual tailings is claimed to reduce the dust problem and to ensure that cyanide from the reprocessing solutions does not enter the streams and rivers.

TABLE 7A. TAILINGS REPROCESSING PROJECTS IN CANADA

Company	ERG Resources Inc.	Giant Yellowknife Mines Limited	Lac Minerals Ltd.
Project	Old tailings ponds in Timmins area	Tailings retreatment	Lake Shore tailings
Location	Timmins, Ont.	Yellowknife, N.W.T.	Kirkland Lake, Ont.
Commodity	Gold	Gold	Gold
Capacity		10 000 tonnes per day	750 tonnes per day
Reserves	170 million tonnes @ 0.432 g Au/tonne	7 million tonnes @ 2.3 g Au/tonne	3.3 million tonnes @ 2.6 g Au/tonne
Started	October 1988	May 1988	January 1989
Ended	Fall 1989	October 1990	
Current Status	Care and maintenance since April 1990	Ceased	Current operation
Capital Cost	$78 million	$25.5 million	$11 million
Operating Cost	Projected @ US$5.63 per g gold	Predicted $5.78/tonne, reported $8.03 per g in 1988	Budgeted @ $4.50 per g
Mining Method	Water monitors	Summer operation only	Dredge
Milling Process	Flotation, regrind, cyanidation, carbon-in-pulp	Carbon-in-pulp	Macassa mill
Production	Est. 529 kg Au in 1988	687 kg Au in 1989	
Profitable?	No	Broke even during last year	Presumed profitable
Remarks	Financial and environmental disaster due to short falls in feed grade, throughput and metallurgical recovery		

TABLE 7B. TAILINGS REPROCESSING PROJECTS IN CANADA

Company	Eastmaque Gold Mines Ltd.	Candorado Mines Ltd. and Cantrell Resources Ltd.	Sikaman Gold Resources Ltd.
Project		Nickel plate tailings	High River Gold Mines project
Location	Kirkland Lake, Ont.	Hedley, B.C.	Snow Lake, Man.
Commodity	Gold	Gold	Gold
Capacity	2270 tonnes/day upgraded to 2500 tonnes/day		
Reserves	7 million tonnes @ 1.3 g Au/tonne	1.5 million tonnes @ 1.4 g Au/tonne	274 000 tonnes @ 12.9 g Au/tonne
Started	December 1987	November 1988	Proposed for 1991
Ended	? 1999		
Current Status	Current operation	Current operation	Seeking financing
Capital Cost	$10.5 million	$3.2 million	$17 million
Operating Cost	US$7.07/g Au		$42.86 per tonne
Mining Method	Dredging year round		
Milling Process	Flotation	Heap leach	Arseno process and cyanidation
Production	56 kg Au per month	25 kg of gold in 1989	
Profitable?	$865 000 operating profit for first four months	Presumably	Hopefully
Remarks	Removal of pyrite from the tailings is an environmental benefit		Will improve environment by curtailing arsenic leachate from the present tailings

TABLE 7C. TAILINGS REPROCESSING PROJECTS IN CANADA

Company	Sumac Ventures Inc.	Craigmont Mines Limited	Baie Verte Reprocessing Inc.
Project	Old Union project		Wet milling project
Location	Grand Forks, B.C.	Merritt, B.C.	Baie Verte, Nfld.
Commodity	Gold	Magnetite (iron ore)	Chrysotile asbestos
Capacity	91 000 tonnes @ 1.7 g Au/tonne	136 tonnes per day of tailings	
Reserves			
Started	1988	November 1969	August 1990
Ended	June 1989	November 1982	? 2010
Current Status	Closed	Possible recommencement in 1992	Operations suspended due to a dispute between the owners
Capital Cost			$22 million
Operating Cost			
Mining Method			
Milling Process		Magnetic separation	
Production		One million tonnes of magnetite concentrate (1969-82)	
Profitable?		Presumed profitable	Not known
Remarks	Closed after waste management inspector detected cyanide in test wells		

TABLE 7D. TAILINGS REPROCESSING PROJECTS IN CANADA

Company	Noranda Minerals and Lavalin Inc.	Curragh Resources Inc.
Project	Magnola project	Rose Creek tailings deposit
Location	Thetford Mines, Que.	Faro, Yukon
Commodity	Magnesium	Zinc, lead, silver
Capacity	50 000 tonnes/year of magnesium	
Reserves		? 40 million tonnes @ 3% Pb-Zn
Started	Mid-1990s	? 2006
Ended		?
Current Status	Process testing	Proposed in abandonment plan
Capital Cost	$400 million	$5.4 million
Operating Cost		$6.50/tonne
Mining Method		Hydraulic monitor and slurry pump
Milling Process		Grind and flotation
Production		
Profitable?		Expected to break even
Remarks		Potentially acid generating tailings will be placed into Faro Pit and stored underwater to prevent acid drainage

TABLE 8. A PARTIAL LISTING OF FOREIGN TAILINGS REPROCESSING OPERATIONS

Country	Project Name	Location	Commodity Extracted
Australia	Buniyong	Victoria	Gold
	Charters Towers	Queensland	Gold
	Cobar Tailings	New South Wales	Gold
	Gwalia Tailings	Western Australia	Gold
	Kalgoorlie Tailings	Western Australia	Gold
	Mount Morgan	Queensland	Gold
	Sunburst	Queensland	Gold
	Trafalgar and Lancefield	Western Australia	Gold, silver
	Warrego	Northern Territories	Copper, gold, bismuth
Chile	Punitaq		Copper
South Africa	Daggafontein	Transvaal	Gold, silver
	ERGO	Transvaal	Gold, silver, uranium
	Freegold	Orange Free State	Gold, uranium
	Gazankulu	Transvaal	Gold
	Knights	Transvaal	Gold
	Nigel	Transvaal	Gold
	Nugo; Rand Mines Milling and Mining	Transvaal	Gold
	Sallies	Transvaal	Gold
	Simmergo	Transvaal	Gold, silver
	Village Main Reef	Transvaal	Gold
	Waverly	Transvaal	Gold
Spain	Santa Elvira	Jaen	Lead, silver
United States	Gooseberry	Nevada	Silver, gold
	Cripple Creek	Colorado	Gold
	Eldorado Canyon	Nevada	Gold, silver
	Silver City	Utah	Gold
	Magma Copper	Arizona	Copper
Venezuela	Mocupia Gorge	Bolivar	Gold
Zimbabwe	Cam and Motor	Eiffel Flats	Gold
Zambia	ZCCM	Nchanga Tailings	Copper

At Miami, Arizona in the United States, the Magma Copper Co. began to reprocess tailings from the old Miami Copper Mine in April 1989. These tailings consist of 34.5 million tonnes with an average grade of 0.33 percent copper that were dumped during the period 1911 to 1932. Magma reprocesses 10 900 tonnes of tailings per day. Capital cost of the project was estimated at US$19.6 million and operating costs are about US$2.50 per tonne. The project produces a major environmental benefit in that it removes the tailings from a watercourse close to the town of Miami and places the residual tailings in an abandoned open pit, underwater and isolated from the regional water-table, to eliminate the environmental risk of AMD.

3.2 The Potential for Reprocessing of Mine Tailings

3.2.1 Base Metal Mines

Tailings from base metal mines generally contain very little potential for commercial reprocessing operations. As discussed earlier, sulphide minerals, such as pyrite and pyrrhotite, commonly contained in base-metal tailings are an environmental liability because they constitute a potential source of acid drainage.

There have been examples of successful Canadian reprocessing of base-metal tailings however. There is the notable project of Craigmont discussed in 3.1 above. There is also the example of Cominco's Sullivan lead-zinc mine at Kimberley, B.C., where pyrite and pyrrhotite are recovered from the tailings stream within the mill and converted into sulphuric acid, which is used with phosphate rock to make fertilizer. The principal waste product from this process is gypsum, which is much more benign and easy to store than pyrite and pyrrhotite.

In New Brunswick there are large base-metal tailings deposits containing very high amounts of sulphide minerals that are potential sources of sulphur, sulphuric acid and by-product metals. The Canada-New Brunswick Mineral Development Agreement contains provisions for a research project to tackle this problem.

CANMET has developed a ferric chloride leach process that could improve the metal recovery from New Brunswick complex sulphide deposits by 28 percent to 37 percent of the ore value. Moreover, this process is potentially applicable to the reprocessing of tailings. CANMET is currently seeking industry partners to build and operate a demonstration plant to prove the process on a commercial scale.

The MEND program is considering potential new uses for pyrrhotite and pyrite concentrates. At Sudbury, Ont., Falconbridge and Inco are storing high sulphide tailings separate from low sulphide tailings so that if a new process is developed for the reprocessing of high sulphide tailings, the high sulphide tailings will be readily available.

Finally, tailings at the Newfoundland Zinc Mine operation at Daniel's Harbour, Nfld., which consist largely of the mineral dolomite, have been used experimentally as a soil conditioner.

3.2.2 Coal Mines

Coal is known to occur in all Canadian provinces and territories except Quebec and Prince Edward Island. It is mined extensively in the provinces of Nova Scotia and New Brunswick in the east and Saskatchewan, Alberta and British Columbia in the west.

In Nova Scotia and New Brunswick the bituminous metallurgical and thermal coals contain 2 percent to over 8 percent sulphur. Consequently the coals and even some of the overburden have the potential to generate AMD.

Production and accumulation of waste material in New Brunswick is confined to the Minto-Chipman region of Queens County. It has produced over 38 million tonnes of coal and its current production is approximately 500 000 - 550 000 tonnes per year.

In Nova Scotia coal mine waste material has been accumulating over a period of more than 100 years. An estimated 54 million tonnes of coal mine waste material is to be found in old dumps, most of which are located close to existing communities. No washing was practised in the early years of operation. High ash coal particles were sorted by hand and the high ash fine coal fraction was sometimes removed by screening and then discarded. Later on, partial washing of the coarse fractions resulted in high losses of useable fine coal.

The presence of coal in these dumps creates both environmental and safety hazards. Environmental hazards are dependent on the nature of tailings material and by-products that eventually leak to water streams or end up in the atmosphere. In addition to AMD hazards, there is the risk of spontaneous combustion. The emission of smoke containing sulphur dioxide from spontaneous combustion of coal has been a constant source of complaint in some of the communities in Nova Scotia.

Currently, about 94 percent of the coal in Canada is produced in the west, mostly by open-pit and strip mining methods. Large quantities of waste material have been accumulating near processing plants in Alberta and British Columbia over the last 20 years. In western Canada, the losses of fine coal to tailings are magnified by the high proportion of fines in run-of-mine coals and occasionally by the presence of partly oxidized coal. The fine cleaning circuits are usually the least efficient operations in coal preparation plants. In addition, during the early operations of new plants, and before the implementation of changes to improve fine coal recovery, considerable amounts of fine saleable coal were lost to tailings ponds. Over the years, large tonnages have accumulated causing shortages of space near preparation plants, particularly in the mountain region. This has created a potential environmental hazard. As in the case of the eastern Canadian fields, the presence of coal in these dumps also creates the risk of spontaneous combustion. On the other hand, the western Canadian coals are low in sulphur and therefore acid drainage from waste dumps is generally not a major problem.

The problem of tailings with substantial coal content is not unique to Canada. For example, in the United States it is estimated that 100 million tonnes of tailings are added every year to the many hundreds of millions of tonnes of coal wastes currently on the ground.

Reprocessing of coal tailings where possible (fines fraction is generally more suitable) to recover saleable coal can serve both economic and environmental objectives. The recovery of coal from tailings requires minimal mining cost and therefore the margin of profit per tonne may be substantial. The removal of coal particles would minimize the above mentioned risks of spontaneous combustion and the release of pollutants into water streams. Also, it would reduce the necessity to find more space for tailings ponds near the preparation plants.

Private entrepreneurs have been recovering thermal coal from abandoned waste coal dumps in Nova Scotia over the last several years at a rate of 50 000 - 150 000 tonnes per year. The Cape Breton Development Corporation in Sydney selectively mines waste dumps for preparation plant feed.

Fording Coal in British Columbia is believed to mine some old fine tailings that it either ships directly as thermal coal or mixes with other coal products. The company has also reportedly investigated the feasibility of using it as feed for an on-site thermal power generating plant.

Westar Mining has investigated the reprocessing potential of their tailings to recover thermal coal in a pilot plant study with CANMET. Westar is currently looking into the feasibility of setting up a commercial processing plant. The Smoky River Mine near Grande Cache, Alta. dries and ships its tailings to a nearby power station of Alberta Power under a long-term contract for the cost of drying, handling and shipping the tailings. The company is required to manage the disposal of fly ash from the power station. The quantity of fly ash is much less than the quantity of tailings.

In the United States, The Public Utility Regulatory Policies Act established incentives for private sector initiatives in electrical energy power generation. A qualifying facility can contract with a public utility to sell electricity at the utility's "avoided cost." The Federal Energy Regulatory Commission recognizes coal wastes to be a qualified waste fuel for small power production facilities. It is believed that through application of fluidized bed combustion technology, abandoned coal waste piles can be successfully reclaimed as materials are excavated and used as fuel in new power generating plants. The impact of these type of projects on abandoned mine land reclamation is expected to be significant.

3.2.3 Precious Metal Mines

In 1989, 55 primary gold mines in Canada processed over 26 million tonnes of ore and produced about 136 tonnes of gold. Because the gold content is only a small fraction (average 5-6 ppm) of the ore processed, most of the ore ends up as tailings. This amount is added each year to the many millions of tonnes already accumulated over the years in many parts of the country. Gold tailings are usually finely ground (80 percent minus 150 µm) material containing a high percentage of quartz, other silicates, carbonates and some metallic sulphides (pyrite, pyrrhotite).

The gold tailings can be reprocessed either to recover some of the gold left by the previous operator or for other applications. The other applications could be in land fill and in brick and block manufacturing. However, these applications are rather limited by their locations remote from potential markets for these products.

In recent years, there has been a significant increase in the number of projects in Canada to reprocess tailings of gold mines. Depending on the grade of the original ore and the year that it was processed, the quantity of gold left in the tailings could be sufficient for economic reprocessing by the private sector without any government assistance. This potential is evidenced by the fact that during the last several years the majority of all the reprocessing projects in Canada, which were either in operation or were contemplated, were those of gold tailings. This is due substantially to relatively higher gold prices as well as improvements in processing technology.

The reprocessing of gold tailings to recover the gold left by the previous operation has only a very marginal effect on the environment since most of the successful projects recover only a very small fraction of the total waste volume. These projects still have the problem of disposal of the remaining waste material. However, as the current regulations governing the disposition of mine wastes are generally more stringent than those that applied at the time that these reprocessed wastes were originally accumulated, there is an environmental benefit realized when these wastes

are reprocessed, stored and reclaimed to modern standards of environmental protection. Additionally, if another mineral like pyrite is extracted during the reprocessing of the tailings, as in the case of the Eastmaque operation, it will improve the environment considerably by reducing the acid mine drainage potential of the tailings. The use of new technology to reprocess tailings can result in environmental benefits such as in the case of Snow Lake Gold Project where the process will convert the arsenopyrite mineral into environmentally stable ferric arsenate.

3.2.4 Uranium Mines

Table 9 provides a listing of all the mine tailings deposits of active and inactive uranium mines in Canada. There are two uranium tailings deposits in the Northwest Territories, six in Saskatchewan and fourteen in Ontario.

Uranium mine tailings may possess any or all of the problems posed by other kinds of tailings, plus the additional hazard of radioactivity. The radioactivity in uranium mine tailings is caused partly by residual uranium, which the uranium extraction plant failed to recover, but principally by the thorium^{230}-radium^{226}-radon^{222} decay series that is present in all uranium ores but is not usually recovered in the uranium extraction process. Radium^{226} is soluble in water and radon^{222} is a gas. All of these radioactive products present health hazards by varying degrees.

Uranium tailings contain small amounts of gold, nickel, titanium, thorium and rare earths. At the Cluff Lake mine in Saskatchewan, tailings from the D Zone were reprocessed to extract economic concentrations of gold. The feasibility of extracting nickel from the Key Lake tailings and of extracting titanium, thorium and rare earths from the Elliott Lake tailings has been studied but found to be uneconomic.

3.2.5 Oil Sands

Slightly less than half of the world's heavy oil deposits (estimated at 10^{12} m^3) are located in Alberta. The majority of heavy oil deposits are relatively deep and not suitable for surface mining. However, in the Athabaska area of Alberta, there are several major oil sand orebodies that are amenable to open-pit exploitation. Syncrude Canada Ltd. (Syncrude) and Suncor Inc. (Suncor) operate the only two commercial oil sands plants in the world near Fort McMurray, Alberta. The Suncor plant, which was brought on stream in 1967, has a current processing capacity of 40 million tonnes per year of oil sands. The Syncrude plant, completed in 1978 at a cost of $2.1 billion, has a current processing capacity of 100 million tonnes per year of oil sands. Suncor produces about 60 000 barrels per day of synthetic crude, and Syncrude produces about 130 000 barrels per day.

Both Syncrude and Suncor use the Clark caustic-hot water process to extract bitumen from the oil sands. In the production of synthetic crude oil from oil sands by this process, large quantities of water (about 15 m^3 per 1 m^3 of synthetic crude oil) are used. Because only about three quarters of process-affected waters is available for recirculation, large quantities of wastes in the form of sludge are produced. These fluid wastes are stored in a tailings pond, enclosed by dikes and beaches composed of compacted tailings sand.

Currently, the two Alberta oil sands plants are storing some 200 million m^3 of fines in various tailings ponds, the volume of which is increasing at a rate of about 30 million m^3 per year.

The above mentioned sludge discharge contains a mixture of bitumen (2-5 percent), minerals (25-40 percent) and water (55-70 percent). The higher range of bitumen in the sludge is generally the

TABLE 9. URANIUM TAILINGS IN CANADA

Site/ Location	Operator/ Years	Mine Status	Volume (million tonnes)
Port Radium/N.W.T.	Eldorado/1933-60	Inactive	0.9
Rayrock/N.W.T.	Rayrock/1957-59	Inactive	0.1
Lorado/Saskatchewan	Lorado/1957-60	Inactive	0.6
Gunnar/Saskatchewan	Gunnar/1955-64	Inactive	4
Beaverlodge/Saskatchewan	Eldorado/1953-82	Inactive	6
Dyno/Ontario	Canadian Dyno/1958-60	Inactive	0.4
Bicroft/Ontario	Bicroft/1958-63	Inactive	2
Faraday/Ontario	Faraday/1957-64	Inactive	2
Madawaska/Ontario	Madawaska/1976-82	Inactive	2
Nordic/Ontario	Rio Algom/1957-68	Inactive	13
Lacnor/Ontario	Northspan/1957-60	Inactive	3
Stanrock-CanMet/Ontario	Stanrock-CanMet/1957-64	Inactive	7.5
Spanish American/Ontario	Northspan/1957-60	Inactive	0.5
Pronto/Ontario	Pronto/1955-60	Inactive	5
Agnew Lake/Ontario	Agnew Lake/1977-83	Inactive	2.5
Panel/Ontario	Rio Algom/1958-61 and 1978-90	Inactive	14
Quirke/Ontario	Rio Algom/1956-61 and 1968-90	Inactive	42
Denison/Ontario	Denison/1957-59 and 1960-	Active	54
Stanleigh/Ontario	Rio Algom/1958-64 and 1983-	Active	15
Cluff Lake/Saskatchewan	Amok/1980-	Active	0.9
Rabbit Lake/Ontario	Cameco/1975-	Active	Pond 6 Pit 0.3
Key Lake/Saskatchewan	Cameco/1983-	Active	2

case at Suncor. The terminal sludge is a gel-like material containing at least 30 percent solids. The solids content precludes the survival of fish and other aquatic life and yet is too easily fluidized to support traffic. The tailings water, which comprises 70 percent of sludge, is acutely toxic to fish.

The 2-5 percent bitumen in sludge with 70 percent water becomes 7-16 percent bitumen in dewatered sludge. Therefore, any plan calling for the transfer of sludge from the tailings ponds to a permanent disposal site would technically present opportunities to extract residual bitumen in the sludge.

Vanadium and carbon were recovered from fly ash at Suncor by Carbovan Inc. However, a combination of low vanadium prices coupled with operating, engineering and mechanical problems caused the operation to be suspended in May 1991.

The primary tailings from the tar sand extraction plants consist largely of silica sand and they have been considered as a source of glass sand. Beneficiation using specialized magnetic, attrition and gravity separation techniques resulted in glass sand suitable only for the manufacture of bottles, plate glass, window glass and coloured ware. It was not suitable for fine tableware or optical glass. While the tailings sand appears suitable for glassmaking, the cost of preparing the sand and the failure to achieve a high quality glass sand limits its commercial attractiveness.

Suncor is currently planning an extensive sampling of its tailings to evaluate their mineral content in order to determine their economic potential.

3.2.6 Iron Ore Mines

Canadian examples of iron ore tailings reprocessing are not available. On the other hand, CANMET research studies have shown that some iron ore tailings (Marmoraton, Hilton) could be made into dry-pressed fired bricks for construction use. However, these same CANMET studies also showed that the expected profit margins were too small to attract investment into the projects.

Tailings from the iron ore mines near Schefferville, Quebec contain principally quartz and clay, which have been recognized as potential raw materials for the manufacture of paint and ceramics.

One recently closed iron ore mine (Adams mine at Kirkland Lake, Ontario) has been considered as a dump site for garbage from the Toronto region.

3.2.7 Asbestos Mines

Asbestos has been produced in the Yukon, British Columbia, Quebec and Newfoundland. Large quantities of tailings have been accumulated over the years, particularly in Quebec. These tailings are composed mainly of magnesium oxide and silica. The tailings piles could be reprocessed to recover either the remaining chrysotile fibre left by the original ore treatment or magnesium metal.

The recovery of short chrysotile fibre left in the tailings piles is now possible because of a technological improvement in the ore processing technique. In particular, a new wet process was developed and effectively implemented in Newfoundland and in British Columbia. The federal government was involved during the development phase of the project and during the construction of the Newfoundland wet mill. Initially, the wet mill was using rejects from the dry mill

as primary feed, with a view to begin processing old tailings when the open-pit mine closed in February 1991. Operations are currently suspended due to a legal dispute between the owners.

The other possibility for reprocessing asbestos tailings is to recover the magnesium metal. There are different technologies available to achieve this goal. The Magnola Project in Quebec is reaching the pilot plant testing stage and a commitment to go ahead with the construction of a commercial plant is anticipated. Both levels of government are partners with the private sector in this project, which will require a substantial investment.

The recovery of shorter fibre from the tailings of the dry process will not result in an improved environment unless the reject from the wet process is discharged into the abandoned open pit. On the other hand, the extraction of the magnesium from asbestos tailings could reduce the quantity of material by some 10 to 15 percent.

3.2.8 Potash Mines

The ten potash mines in Saskatchewan and the two in New Brunswick produce over 20 million tonnes per year of solid salt wastes. This amount is added each year to the more than 300 million tonnes of solid salt wastes that are stored on surface, mainly in Saskatchewan. These waste piles occupy about 1700 hectares of land. The total area of land occupied by potash mining in Saskatchewan is about 3500 hectares and the underground mined area is about 39 000 hectares. Waste brine and brine produced by precipitation runoff from the salt piles are stored in large ponds for evaporation or deep well injection. In Saskatchewan, from 25 to 55 percent of the brine is injected into saline aquifers several hundred metres below the orebody. The Potacan mine in New Brunswick discharges brine into the ocean. Potash Corporation of America, at the Penobsquis mine near Sussex, New Brunswick, disposes of most of its tailings underground by using them as stope fill.

The main environmental threat with salt tailings is that the brine may escape containment facilities and contaminate the surface soils and the groundwater table. Brine may also find its way into fresh groundwater when surplus brine is injected into aquifers. However, this appears to be a remote possibility in Saskatchewan because the aquifers in question are deep and below the potash beds. Sub-surface migration of brine is known to have occurred at all of Saskatchewan's potash mines and in some cases brine has migrated up to two kilometres in the surficial aquifer.

While a mine is active, various mitigative methods can contain the brine and prevent unacceptable contamination of surface and ground water. However, no satisfactory method has yet been found to permit abandonment of potash tailings piles. It has been predicted that, by the time all economically recoverable potash has been mined in Saskatchewan and if methods of managing wastes do not change, over 200 waste piles, containing 20 billion tonnes of salt waste and covering some 1600 square kilometres, will ultimately be generated. However, methods of managing waste are changing. The Saskatchewan Department of the Environment and Public Safety has stated that no additional land beyond that presently allocated will be approved for tailings containment.

Wastes produced by the refining of potash in Saskatchewan range from 60 to 70 percent of the ore. As discussed above, sodium chloride or salt is the major component and accounts for about 90 percent of the waste. Potassium chloride accounts for another 5 percent. The insolubles (slimes) comprised of minerals such as dolomite, anhydrite, gypsum and clays typically make up to 5-10 percent of the waste. Numerous other minerals are present in trace quantities.

At first glance, reprocessing potash tailings to produce and market salt appears to be an ideal solution since the production costs are estimated to be relatively low. However, most road salt in the prairie region is already supplied by the potash industry and high transportation costs to other markets make it uneconomical.

International Minerals and Chemicals Corporation (Canada) Limited supplies by-product rock salt from its potash operation at Esterhazy (capacity 120 000 tonnes per year). Sifto Canada Inc. produces 20 000 - 30 000 tonnes per year of fine salt by processing salt tailings from a nearby potash operation at Patience Lake. The Canadian Salt Company Limited at Belle-Plaine produces 100 000 - 110 000 tonnes per year of table salt from by-product brine from the potash solution mine operated by Kalium Canada Ltd. The Rocanville Division of Potash Corporation of Saskatchewan produces commercial salt by screening. In New Brunswick, Potash Company of America extracts salt directly and also as a by-product at its potash mine near Sussex at a rate of 400 000 - 500 000 tonnes per year. This salt is sold mainly to companies in the eastern United States.

While the Saskatchewan potash industry will likely continue to supply the prairies with a large portion of its salt products, the chances of breaking into other salt markets in North America or offshore do not appear to be promising because of the high transportation costs.

Marketing of other minerals, especially metals, contained in potash tailings is a possibility that has not, as yet, been seriously explored. Their removal would not result in a significant reduction in waste because they represent such a small portion of the total waste produced. However, the generation of brine from the separation process would reduce costs of disposal of tailings by well injection since the cost of dissolution would be associated with the mineral extraction.

The use of salt tailings for backstowing underground to support the workings and enhance potash recovery is an attractive option. In fact, it is being practised at the New Brunswick potash mines. Also, the beneficiation of ore underground using electrostatic separation will reduce haulage costs and could facilitate storage underground.

In Saskatchewan, old mined out areas have collapsed leaving no space for tailings presently stored on surface. Existing salt piles could be dissolved and deep well injected over the remaining life of the mine. The cost of injection could be reduced somewhat by using gravity and nonpotable water.

3.2.9 Other Industrial Minerals

Barite has been recovered by reprocessing of tailings at the Mineral King mine and the Silver Giant mine in southeastern British Columbia, and from the Buchans mine in Newfoundland.

The tailings deposits of some gypsum mines in Nova Scotia contain anhydrite that potentially could be recovered for use in cement manufacture or as a fertilizer for peanut crops.

Mica occurs in the tailings deposits of many metal mines in Canada. The Hemlo gold mine tailings and the Highland Valley Copper mine tailings have both been studied with a view to the production of mica. To date, the low unit value of mica has thwarted these plans to produce mica from mine tailings.

Feldspar recovery from the tailings of TANCO's spodumene mine at Bernic Lake, Manitoba has been proposed but was put on hold in 1989 due to unfavourable market conditions.

3.3 Research and Development Initiatives

Tailings are reprocessed either to recover the contained mineral or metal values such as gold, silver and copper or for other applications such as landfill, brick and block manufacturing, and backstowing underground to support roof. Alternatively, they may be reprocessed to make them environmentally benign.

The challenge of reprocessing abandoned tailings for the recovery of contained minerals or metals is analogous to extraction and recovery of values from low-grade ores. Mine and mill rejects are wastes because they could not economically be processed to recover residual metals with the technology available at the time. Therefore either a significant change for the better in the economics of metal values or advances in extractive and/or process technology, or both, is a prerequisite for successful reprocessing.

Research and development are the keys to advances in process technology and for finding new and improved uses for mine and mineral processing wastes. Moreover, modified or new technologies can be introduced into process streams to reduce the volume and toxicity of the wastes generated in the future. There are examples of successes both in the private and public sectors.

Sikaman Gold Resources Ltd.'s Snow Lake Gold Project (Section 3.1) is a good example. The project proposes to use a newly developed and patented Arseno Process to process arsenical gold tailings (12.9 g Au/tonne) that were set aside during a mining operation between 1949 and 1958. The process not only recovers 90 percent of the gold content of the tailings but it also converts the arsenopyrite mineral into an environmentally stable ferric arsenate compound. The process was developed by a private company with government assistance.

Another example of private research is Syncrude's Tails Oil Recovery System which increased bitumen recovery from 91 percent to 95 percent. However, there is a continued need for research in finding ways of handling the existing tailings ponds sludge and reducing the toxicity of ponds.

As mentioned above, recovery of nickel and vanadium from Athabasca tar sands fly ash was investigated by the Mines Branch of the Department of Energy, Mines and Resources (EMR) in the 1970s. Recently a company named Carbovan has been recovering vanadium and carbon from fly ash at Suncor.

CANMET, the main research and development arm of EMR has been active in mine waste research for many years. CANMET involves industrial clients in its research projects from the outset and works closely with other research and development organizations. The following is a brief description of a few of these recent initiatives.

Cooperative Study for Disposal of Tar Sands Sludge

CANMET was a founding partner in a government-industry project to assess ways of disposing of waste from tar sands. The aim of the research is to investigate efficient and environmentally sound solutions to the problem of tar sands sludge. The five-year project, which has a budget of $5 million, involves CANMET, the Alberta Oil Sands Technology and Research Authority, Syncrude Canada Ltd., Suncor Inc., the National Research Council of Canada, the Alberta Research Council and Alberta Energy.

International Study on Mine Backfill

CANMET, the U.S. Bureau of Mines and the Ontario Ministry of Labour signed a Memorandum of Understanding to assess the use of agglomerated tailings for mine backfill. The joint study will evaluate the properties and behaviour of agglomerated backfill and address specific problems associated with the use of agglomerated materials. CANMET and the Ontario Ministry of Labour are contributing one half of the $50 000 project costs, while the U.S. Bureau of Mines is providing the remaining funds.

High-Volume Fly Ash Concrete

Pioneering research performed by CANMET has led to the development of high-volume fly ash concrete. CANMET's studies confirm that structural quality, high-volume fly ash concrete can be produced with mechanical properties equivalent to those of conventional concrete at considerable cost savings. These concretes have excellent potential for use in foundations, large retaining walls, piles and large columns. Their toughness and ability to control expansive alkali-aggregate reactions promise to make them serviceable in a wide range of conditions. One of the important aspects of the studies has been the collection of performance data on the use of this concrete in the Canadian climate. Annual use of fly ash in concrete in the Halifax area has increased from almost nil in 1983/84 to a current level of approximately 13 000 tonnes with a market value of about $1 million. CANMET's work was recognized as a breakthrough in the industry at the Third International Conference on Fly Ash, Silica Fume, Slag and Natural Pozzolans in Concrete, held in Trondheim, Norway in June 1989.

3.4 Effectiveness of Tailings Reprocessing as an Environmental Cleanup Measure

Some tailings reprocessing projects, for example Magma Copper in Arizona, are spectacularly successful in that they produce a major improvement in the environmental conditions in the immediate vicinity of the mine site and also produce a handsome profit for the operator. Other tailings reprocessing operations, for example ERG at Timmins, Ontario, are disastrous failures that lose money for the operator and leave the environment in worse condition than before the commencement of reprocessing operations.

As described above, tailings reprocessing operations do not usually recover a large proportion of the volume of the original tailings. Even the Craigmont operation, which recovered one million tonnes of magnetite from copper mine tailings, reduced the volume of tailings by less than 3 percent.

However, a modern tailings reprocessing operation can be expected to produce some environmental benefit simply because it will be subject to modern regulations governing abandonment and reclamation. This environmental benefit will arise because the current abandonment and reclamation requirements are more rigorous than those of previous years. However, these environmental benefits will be realized only if the project is technically and financially successful.

Two of the tailings reprocessing operations listed in Table 7 caused additional degradation of the environment. Sumac Resources Ltd. suffered leakage problems with the solutions utilized to leach the gold and silver from the old Union Mine tailings. This leakage caused the local groundwater to become contaminated with cyanide. ERG Resources Inc. began tailings reprocessing at Timmins without first placing with the municipality an agreed reclamation bond.

When a combination of technical and financial problems prematurely ended the operation, the result was a significant deterioration of the environmental quality.

4. THE ROLE OF GOVERNMENT IN TAILINGS REPROCESSING

In Canada, jurisdictional authority for the control and management of mineral resources within the provinces resides primarily with the provincial governments. However, the federal government has environmental responsibilities that overlap those of the provinces in the area of controlling discharges from mines into the environment. Within the Yukon Territory and the Northwest Territories, jurisdictional authority for mining and environmental protection rests with the federal government, although it may devolve to the individual territorial governments at some future d

Chapter three presented examples of successful tailings retreatment projects and indicated the potential for additional future reprocessing operations. The examples demonstrate that the Canadian mineral industry is willing, able and eager to commission those tailings retreatment projects that offer a reasonable probability of commercial success.

4.1 Tax Measures

For the purposes of the Income Tax Act, a mine tailings deposit is not considered to be a naturally-occurring mineral deposit as contemplated by the definition of "mineral resource" set out in section 248 of the Income Tax Act. Instead, it is regarded as an inventory of "ore from a mineral resource" where the "mineral resource" is the original mineral deposit from which the tailings were derived. As a consequence, tailings reprocessing projects are not eligible for the special tax treatment of mining operations including special treatment of exploration expenses, flow-through share financing and Class 41 accelerated capital cost allowances.

However, pursuant to section 1204 of the Income Tax Regulations, income from "the processing in Canada of...ore...from mineral resources in Canada..." is included in the definition of "resource profits." The result is that the resource allowance is available to mine tailings reprocessing projects. This is appropriate since these projects would normally pay provincial mining taxes that are not deductible. Until it was phased out on January 1, 1990, depletion was also earned by tailings reprocessing projects on machinery and equipment described in subsection 10(k) of Schedule II of the Income Tax Regulations.

4.2 Other Fiscal Measures

In some countries of the world, reprocessing of mine tailings may be supported in part by government grants or subsidies. For example, in the United Kingdom, Derelict Land Grants are available to assist the owners of land which has become derelict as a result of prior industrial use. Several coal mine waste dumps and tailings dumps have been reprocessed with the aid of Derelict Land Grants in projects which have transformed abandoned mine sites into industrial, commercial, residential or agricultural developments.

4.3 Regulations

Legislation exists to enforce compliance with the regulations governing the discharge of effluents from tailings dumps at operating mines. In some provinces regulations are stringent and provide for heavy penalties in the case of violations of the air and water quality standards. In some jurisdictions, a proposed new mining operation and all current mining operations must submit an

acceptable plan for decommissioning, reclamation, rehabilitation and abandonment of the mineral property before receiving the licences and permits that authorize the commencement of mining operations. Coordinated action would be desirable to harmonize federal and provincial requirements.

To ensure compliance and implementation of the mine abandonment plan, the mining company may be required to post a performance bond that would be forfeited in the event that the mining company fails to complete the work described in its abandonment plan.

The earlier mentioned proposal by Curragh Resources Inc. to reprocess 40 million tonnes of tailings at the Faro lead-zinc mine (Table 7d) was, in large measure, the result of the legal requirement for an environmentally acceptable abandonment plan as a condition of the water license. Although the tailings retreatment is not expected to be profitable, it is expected to be considerably less expensive than the alternative of rehabilitating the tailings in their present location.

Refinement of the regulations governing mine reclamation, abandonment and performance bonds would probably result in better storage and treatment of tailings and other wastes at existing operations and improved designs for waste handling in future operations.

In the case of abandoned tailings deposits, where the responsible company and its officers no longer exist and the title has returned to the Crown, the responsibility or liability for environmental impacts from abandoned tailings may rest with the Crown. An example of how governments have responded to this type of situation is illustrated by their action at the Deloro gold mine site north of Belleville, Ontario where about 10 000 tonnes of calcium arsenate is stored in piles alongside the Moira River. These arsenate waste piles were created by smelting operations that closed down in 1961. Under a federal-provincial agreement to clean up toxic dumps in Ontario, the senior governments will spend between $5 million and $10 million to rehabilitate this site.

4.4 Levy on Current Producers

The United States government, under the Surface Mining Control and Reclamation Act of 1977, imposes levies of 35 cents per ton for surface mined coal, 15 cents per ton for underground mined coal and 10 cents per ton for lignite coal on all currently operating coal mines. The monies raised by these levies, informally referred to as the Superfund, are used to finance the reclamation and rehabilitation of abandoned coal mine sites.

Arguments have been advanced counter to the Superfund concept to the effect that the imposition of a similar production levy on the Canadian mining industry would be unfair, because it would be forcing the present day mine operators to pay for the rectification of problems created by previous generations of mine operators. In addition, imposition of a levy may impair the competitive position of current Canadian producers.

4.5 Research and Development Assistance

Section 3.3 above shows the importance of the research and development of new or improved mineral processing technology in the context of tailings reprocessing. Without mineral processing technologies that offer a significant improvement in recovery compared to the technology utilized in the original rejection of the tailings, there is little or no potential for a commercially viable tailings reprocessing operation. This truism is well recognized by governments and the private sector, and both have actively supported mineral processing

research in the form of individual and cooperative projects. The examples presented in Section 3.3 suggest that investment in mineral processing research may be the most cost effective of all the initiatives available to governments.

4.6 Technology Transfer

The term "technology transfer" refers to the activity of worldwide monitoring of newly-developed technology followed by the dissemination of information about the new technologies to all interested parties within Canada. By this means, information about new technologies applicable to tailings reprocessing are quickly made available to all potential users of the technology.

Through CANMET, the federal government already operates a program of technology transfer covering mining and mineral processing technology.

5. CONCLUSIONS

Recent tailings reprocessing operations in Canada and abroad have ranged from brilliant successes, producing significant profits and environmental benefits, to dismal failures causing bankruptcies and additional degradation of the environment.

The quantity of residual tailings that remains to be stored after a tailings reprocessing operation is usually very nearly the same as the quantity of the original tailings deposit.

The reprocessing of an abandoned mine tailings deposit will be of benefit to the environment if it extracts a hazardous component or if the residual tailings are stored in an impoundment that is environmentally superior to the original impoundment.

Tailings reprocessing operations sometimes cause toxic chemicals, which were not present in the original tailings, to be added to the residual tailings.

In the case of most of the tailings deposits that currently pose major environmental hazards, it may be more cost effective to undertake remedial work to improve the integrity of the present impoundment and containment structures and to control other environmental impacts rather than to reprocess the tailings.

Successful tailings reprocessing requires mineral processing technology that is significantly more effective and efficient than the technology used when the original tailings were deposited. This means that, in many cases, private sector and government support for mineral processing research and development will provide the most effective encouragement for the reprocessing of abandoned tailings.

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48E CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

Rapport sur les activités de retraitement des résidus abandonnés

Fédéral

Halifax (Nouvelle-Écosse
Du 22 au 24 septembre 199

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RAPPORT SUR LES ACTIVITÉS DE RETRAITEMENT DES RÉSIDUS ABANDONNÉS

PAR LE

GROUPE DE TRAVAIL INTERGOUVERNEMENTAL
SUR L'INDUSTRIE MINÉRALE

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RÉDIGÉ POUR LA CONFÉRENCE DES MINISTRES DES MINES, À HALIFAX (NOUVELLE-ÉCOSSE)

Septembre 1991

Énergie, Mines et Ressources Canada
Energy, Mines and Resources Canada

AVANT-PROPOS

Le présent document de travail a été préparé par le Groupe de travail intergouvernemental sur l'industrie minérale à la suite d'un engagement pris lors de la Conférence de 1990 des ministres des Mines, visant à «examiner une vaste gamme de mesures, dont la recherche et le développement, en vue d'encourager le nettoyage des résidus abandonnés au moyen d'activités de retraitement»

Traditionnellement, les projets de retraitement de résidus étaient motivés par le profit ainsi que par les possibilités d'amélioration de la technologie de traitement des minéraux, ou encore par des augmentations de prix des produits minéraux. Plus récemment, des projets de retraitement des résidus ont été lancés ou proposés comme moyen technique économique en vue de remédier aux problèmes de pollution tels que la contamination par drainage acide, métaux toxiques et sels.

Ce rapport examine les techniques, les problèmes et les possibilités du retraitement des résidus à travers le Canada et renferme également quelques exemples de techniques et de politiques de retraitement des résidus à l'étranger.

RÉSUMÉ

Problèmes créés par les déchets miniers

Chaque jour, l'industrie minière canadienne produit près de 2 millions de tonnes (Mt) de résidus et d'autres déchets, tels que des morts-terrains, de la pierraille, des scories de fonderie et des cendres volantes.

La valeur de ces déchets minéraux est minime; comme ils se trouvent habituellement dans des zones éloignées des centres urbains, les possibilités d'exploitation sur une base commerciale sont habituellement inexistantes.

Pour être acceptables sur le plan de l'environnement, le stockage et la restauration de volumes importants de déchets minéraux coûtent cher, mais les sociétés minières acceptent maintenant la responsabilité de la restauration après la fermeture des mines.

Un grand nombre d'anciens déchets minéraux abandonnés sont stockés de façon inadéquate et polluent l'air, l'eau et le sol environnants; ils risquent même de créer des effets catastrophiques.

Aspects pratiques du retraitement des déchets miniers

L'amélioration de la technologie de traitement minier ou les hausses de prix des produits minéraux peuvent rendre économiquement viable le retraitement de certains résidus ou déchets miniers. Le cas échéant, les activités de retraitement donneront peut-être l'occasion de stocker les déchets résiduels de façon à préserver la qualité de l'environnement.

Un examen de plusieurs récents projets de retraitement des déchets miniers, proposés au Canada et à l'étranger, a révélé que :

(*a*) La réduction de la quantité de résidus est généralement très faible, de 0,0001 % pour les résidus aurifères jusqu'à 15 % pour la production de magnésium à partir de résidus d'amiante.

(*b*) Les améliorations environnementales sont habituellement limitées.

(*c*) Dans certains cas, l'échec financier ou technique de l'activité de retraitement des résidus a provoqué la dégradation de l'environnement.

(*d*) Comme la réduction de la quantité des résidus est minime, il appert que l'environnement profitera de l'amélioration des méthodes de stockage des déchets résiduels résultant du retraitement.

Un examen des divers secteurs de l'industrie minière permet de conclure que les activités de retraitement des résidus sont théoriquement possibles dans tous les genres d'exploitation minière au Canada. La recherche et le développement portant sur de nouvelles technologies de traitement amélioreront les possibilités de retraitement économique des déchets miniers.

Le rôle du gouvernement dans le retraitement des résidus

Au Canada, l'administration compétente du contrôle et de la gestion des ressources minérales des provinces relève principalement des gouvernements provinciaux. Toutefois, le gouvernement fédéral détient des responsabilités environnementales qui recouvrent celles des provinces dans le secteur du contrôle des décharges minières dans l'environnement. Dans le Yukon et les Territoires du Nord-Ouest,

Dans le cas de la plupart des dépôts de résidus présentant des risques importants pour l'environnement il peut être plus économiquement viable de prendre des mesures correctives pour améliorer l'intégrité des bassins actuels et des structures de confinement et aussi de contrôler la libération et la migration de contaminants plutôt que de retraiter les résidus.

Le retraitement réussi des résidus exige une technologie de traitement des minéraux beaucoup plus efficace et efficiente que la technologie qui avait été employée lorsque les résidus originaux ont été déposés. Dans bien des cas, cela signifie que l'appui du secteur privé et du gouvernement à la recherche et au développement du traitement des minéraux constituera la meilleure motivation pour le retraitement des résidus abandonnés.

TABLE DES MATIERES

		Page
1	INTRODUCTION	1
1.1	Le problème des résidus miniers dangereux pour l'environnement : une question de politique publique que l'on ne doit pas ignorer	1
1.2	Historique et faits nouveaux	1
1.3	Portée et organisation du rapport	1
2.	PROBLEMES ASSOCIÉS AUX DÉCHETS MINIERS	2
2.1	Nature et ampleur du problème des déchets miniers	2
2.1.1	Déchets de l'exploitation minière et du traitement des minéraux	2
2.1.2	Déchets de stériles	4
2.1.3	Résidus des usines de traitement	4
2.1.4	Scories de fonderie	4
2.1.5	Cendres volantes	10
2.1.6	Ampleur du problème de restauration	10
2.1.7	Le programme NEDEM	11
2.1.8	Possibilités et perspectives	12
2.2	Risques environnementaux créés par les déchets miniers	13
2.2.1	Pollution de l'air	13
2.2.2	Pollution de l'eau	13
2.2.3	Émissions radioactives	13
2.2.4	Risques d'effondrement	13
2.3	Dépôts de résidus abandonnés	13
3.	ASPECTS PRATIQUES DU RETRAITEMENT DES RÉSIDUS MINIERS	14
3.1	Exemples récents de projets canadiens de retraitement des résidus réalisés ou proposés	14
3.1.1	Exemples récents de projets étrangers de retraitement des résidus réalisés ou proposés	19
3.2	Les possibilités de retraitement des résidus miniers	21
3.2.1	Mines de métaux communs	21
3.2.2	Mines de charbon	22
3.2.3	Mines de métaux précieux	23
3.2.4	Mines d'uranium	24
3.2.5	Sables bitumineux	26

TABLE DES MATIERES (*fin*)

Page

3.2.6 Mines de minerai de fer 27
3.2.7 Mines d'amiante 27
3.2.8 Mines de potasse 27
3.2.9 Autres minéraux industriels 29

3.3 Initiatives de recherche et de développement 29

3.4 Efficacité du retraitement des résidus comme mesure de nettoyage de l'environnement 31

4. LE RÔLE DU GOUVERNEMENT DANS LE RETRAITEMENT DES RÉSIDUS 32

4.1 Mesures fiscales 32
4.2 Autres mesures budgétaires 32
4.3 Réglementation 33
4.4 Prélèvements sur les producteurs actuels 33
4.5 Assistance à la recherche et au développement 34
4.6 Transfert de technologie 34

5. CONCLUSION 34

BIBLIOGRAPHIE 36

1. INTRODUCTION

1.1 Le problème des résidus miniers dangereux pour l'environnement : une question de politique publique que l'on ne doit pas ignorer

Tout usage soutenu des ressources terrestres risque d'entrainer des conséquences environnementales adverses. L'exploitation minière ne constitue pas une exception. Au Canada, l'exploitation minière et les activités de traitement des minéraux produisent environ 650 millions de tonnes de déchets par an (Mt/a). Cette quantité s'ajoute chaque année aux milliards de tonnes d'anciens déchets de traitement des minéraux et d'exploitation minière accumulés au cours des années et éparpillés à travers le pays.

L'adoption d'une approche réglementaire saine visant les mines nouvelles et celles déjà en exploitation contribuera largement à prévenir de nouveaux problèmes de restauration. Toutefois les pratiques du passé nous ont laissé un héritage de sites abandonnés qui présentent des risques environnementaux graves, sous la forme de drainage minier acide (DMA) risquant de polluer les eaux souterraines de même que l'eau des rivières et des lacs avoisinants.

En outre, la détérioration des digues à stériles peut entrainer des répercussions sérieuses sur l'environnement. Un déversement de résidus d'une mine d'or dans la rivière Montreal, à proximité de Matachewan (Ont.), au mois d'octobre 1990, en constitue un exemple. Des incidents semblables renforcent la perception du public que les sites miniers et les digues de résidus abandonnés présentent de grands dangers écologiques et que des mesures correctives doivent être prises.

1.2 Historique et faits nouveaux

Le *Rapport sur les aspects d'ordre économique et de politique des déversements acides* de 1988, préparé par un sous-comité de l'industrie et par le Groupe de travail intergouvernemental sur l'industrie minérale et portant sur les déchets miniers, concluait que : «Il existe un besoin urgent de mesures visant la remise en état des sites miniers abandonnés.»

Certains membres de Groupe de travail estimaient que le gouvernement pourrait proposer des facteurs incitatifs pour la promotion du retraitement des résidus abandonnés, car ces activités de retraitement peuvent donner lieu à des améliorations dans la qualité de l'environnement.

1.3 Portée et organisation du rapport

Le présent rapport examine les possibilités de retraitement des résidus abandonnés ainsi que la valeur de ce retraitement en tant que moyen d'améliorer la qualité de l'environnement.

Le chapitre deux du rapport dépeint un vaste tableau du problème des déchets miniers et des risques environnementaux crées par ces derniers.

Le chapitre trois examine des cas de projets de retraitement, canadiens et étrangers. Il traite également des possibilités de retraitement des résidus résultant de l'exploitation minière et du traitement des gisements de métaux communs, de métaux précieux, de minéraux industriels (dont la potasse et l'amiante), de l'uranium, du charbon et des sables bitumineux. Il étudie aussi jusqu'à quel point le retraitement permet d'améliorer l'environnement.

Le chapitre quatre traite des initiatives possibles d'encouragement du retraitement des résidus miniers et examine des questions juridiques, fiscales, juridictionnelles et économiques ainsi que les contraintes dont on doit tenir compte.

Enfin, le chapitre cinq présente les conclusions et les recommandations du présent rapport.

2. PROBLÈMES ASSOCIÉS AUX DÉCHETS MINIERS

2.1 Nature et ampleur du problème des déchets miniers

Au cours de l'année 1990, l'industrie minière canadienne a produit du minerai à un rythme de presque 1 million de tonnes par jour (Mt/j). La quantité des résidus résultant du traitement de ces minerais n'a été que légèrement inférieure, soit environ 950 000 tonnes par jour (t/j). La quantité des déchets de stériles produits a aussi été d'environ 1 Mt/j. Il est coûteux de se débarrasser de ces déchets et de les conserver dans des terrils. En outre, ils risquent de polluer les eaux souterraines, les eaux de surface, le sol et l'air avoisinants.

2.1.1 Déchets de l'exploitation minière et du traitement des minéraux

Les déchets de l'exploitation minière et du traitement des minéraux se divisent en plusieurs grandes catégories : morts-terrains, déchets de stériles provenant des mines à ciel ouvert ou des travaux de mise en valeur dans les mines souterraines, rebuts grossiers des usines de traitement produits par les activités de séparation en milieu dense ou de tamisage, et rebuts fins ou résidus d'usines de traitement résultant des activités de tamisage, de séparation magnétique et de flottation.

Le tableau 1 présente une classification simple des déchets minéraux ainsi que des exemples indiquant leurs utilisations actuelles et possibles.

Bien que la composition des déchets minéraux varie énormément d'un emplacement minier à un autre, ceux d'une usine ou d'une installation donnée n'en possèdent pas moins des caractéristiques physiques et chimiques relativement uniformes.

Un grand nombre des déchets accumulés ont une valeur limitée en tant que source de matière première minérale, en raison de leur teneur élevée en impuretés, de leur emplacement éloigné ou des deux. Toutefois, certains d'entre eux sont favorablement situés et présentent un intérêt, en raison des métaux et des minéraux qu'ils renferment ou de leurs caractéristiques physiques et chimiques naturelles. Du point de vue de la réutilisation, les déchets miniers se divisent facilement en deux grandes catégories :

(*a*) Ceux qui présentent un intérêt en raison des minéraux ou des métaux contenus ou pouvant être récupérés, dont le cuivre, l'or ou l'argent.

(*b*) Ceux qui présentent un intérêt en tant que matière première pour la fabrication de produits de consommation ou de divers autres produits tels que les briques et les blocs, ou encore en tant qu'agrégat dans le béton, additifs pour les sols et produits d'apport minéraux.

La réutilisation des déchets de la première catégorie dépend des teneurs en cuivre, en or ou en argent et du fait que ces métaux peuvent ou non être économiquement récupérés.

TABLEAU 1. CLASSIFICATION DES DÉCHETS MINÉRAUX

	Déchets primaires		Déchets secondaires
	Roches de mines	Résidus de traitement	Scories et poussières métallurgiques
Origine et description	La roche a été cassée et enlevée pour mettre à découvert le minerai afin qu'il puisse être extrait. Les accumulations sont importantes, tout particulièrement dans un grand nombre de mines à ciel ouvert. On rencontre une très grande variété de types de roches.	Rebuts des activités de traitement et d'enrichissement des minéraux. Les matières de même provenance sont habituellement de composition homogène et renferment des minéraux de roches, mais peuvent aussi être des sulfures, par exemple des pyrites et des pyrrhotines, ainsi que des traces d'autres minéraux métalliques. Les rebuts sont normalement de taille uniforme. Ceux qui proviennent des activités de tamisage grossier ou de séparation en milieu dense ont des tailles qui peuvent varier de 10 à 1 cm ou moins; les résidus résultant de la flottation ont habituellement des tailles inférieures à 150 µm.	Scories, cendres, poussières et boues des usines métallurgiques et des fonderies, cendres volantes et cendres résiduelles des centrales thermiques alimentées au charbon, poussières de fours à ciment et à chaux. Les matières de même provenance ont habituellement des compositions et des tailles uniformes. La taille des types de résidus séparés varie grandement, de 30 cm ou plus jusqu'à celle de la poussière.
Exemples	Granite, *trapps*, syénite, calcaire provenant des mines à ciel ouvert de minerai de fer.	Résidus de pyrrhotine-feldspath-quartz résultant de la flottation du minerai de nickel-cuivre, résidus de quartz-feldspath provenant du traitement du minerai aurifère, résidus de serpentine des usines de traitement d'amiante, résidus de carbonate-silicate des usines de récupération d'oxyde de niobium, sel provenant des activités de récupération de potasse.	Scories des hauts fourneaux et des fours pour l'élaboration de l'acier, scories de cuivre-nickel, cendres volantes, poussières de ciment et de chaux
Utilisations actuelles ou possibles	Remblai minier, remblai routier, aménagement paysager, ballast de voie ferrée et agrégat de construction.	Source possible de métaux et de minéraux supplémentaires et de matière première pour la fabrication de briques et de blocs, pour la production d'isolant thermique, et aussi comme additifs pour les sols et produit d'apport minéral dans divers produits. Certains résidus sont employés dans les activités de remblayage minier.	Certains déchets conviennent comme matériau de couche de base des routes, agrégat dans les revêtements en asphalte, agrégat léger et lourd dans le béton, adjuvant pouzzolanique du béton et additifs pour les sols

cm : centimètre, µm : micromètre

Par contre, la récupération des déchets de la deuxième catégorie repose dans une grande mesure sur leurs caractéristiques physiques et chimiques naturelles. L'utilisation réussie de ces déchets dans des applications données dépend de leur rendement, qui doit être prédéterminé et satisfaisant, ou encore de leur conformité aux exigences de certaines normes physiques et de performance.

Les tableaux 2 à 6 décrivent les applications actuelles ou possibles des déchets résultant des activités minières au Canada.

2.1.2 **Déchets de stériles** (empilement de surface)

Les déchets de stériles sont largement utilisés localement pour le remblayage des mines souterraines ou à ciel ouvert, dans la construction et l'entretien des routes, et, à l'occasion, en tant qu'agrégat dans le béton et que ballast de voie ferrée. L'utilisation locale par une société minière exige rarement que les déchets satisfassent aux exigences de normes établies, mais elle est plutôt largement fondée sur le fait qu'ils donnent de bons résultats. Toutefois, si les déchets sont vendus à un entrepreneur en vue d'être utilisés dans la construction des autoroutes principales ou comme ballast de voie ferrée importante, le matériau doit évidemment satisfaire aux exigences de spécifications physiques et chimiques établies.

2.1.3 **Résidus des usines de traitement**

Comme les tableaux 2 à 6 le démontrent, il existe de nombreuses applications commerciales actuelles ou possibles pour les résidus des usines de traitement canadiennes.

Les résidus des usines de traitement peuvent être employés localement comme remblai minier et dans la construction. En raison de l'intérêt accru à l'égard des utilisations possibles des résidus des usines de traitement dans les applications telles que la fabrication des briques et des blocs, les additifs pour sols et les produits d'apport minéraux, il devient de plus en plus évident que l'on a besoin d'élaborer des normes pour régir l'emploi de ces matériaux.

2.1.4 **Scories de fonderie**

La production annuelle de scories non ferreuses par les fonderies au Canada est estimée à 8 Mt. La plus grande partie provient des usines de fusion de cuivre, de nickel, de zinc et de plomb à Murdochville et à Rouyn-Noranda (Québec); à Sudbury, à Falconbridge et à Timmins (Ont.); à Flin Flon et à Thompson (Man.), et à Trail (C.-B.).

On élimine normalement ces scories en les utilisant comme matériau de remblayage, bien que les scories de nickel de la région de Sudbury aient été utilisées depuis plus de 25 ans comme matériau de ballast de voie ferrée. Les scories de cuivre des usines de fusion de Rouyn-Noranda et de Flin Flon ont aussi servi de ballast de voie ferrée.

Les scories de silicate bicalcique résultant de la production du magnésium métal par le procédé Pigeon à Haley Station (Ont.) ont fait l'objet d'étude en vue de servir de matière première pour la fabrication de produits de construction. Des briques de construction de bonne qualité ont été produites au moyen d'un procédé à l'autoclave élaboré à *CANMET*.

Des scories non ferreuses ont aussi été utilisées pour la couche de base des routes et comme matériau de remblayage, et également en tant que remblai cimenté dans des mines souterraines.

TABLEAU 2. APPLICATIONS POUR LES DÉCHETS DES MINES DE MÉTAUX COMMUNS NON FERREUX

Société	Métal	Déchets – utilisations actuelles ou possibles
En général	cuivre, plomb, zinc, nickel	Stériles : taille et composition variables Résidus : finement broyés, 75 % de moins de 150 µm, grande variété de minéraux de roches, habituellement avec de grandes quantités de sulfures métalliques (pyrite, pyrrhotine et autres).
Newfoundland Zinc Mines Ltd., Daniel's Harbour (T.-N.)	zinc	Résidus : principalement de la dolomite, utilisés expérimentalement pour réduire l'acidité des sols.
Concolidated Durham Mines Ltd., Prince William (N.-B.)	antimoine	Résidus : principalement du quartz; utilisation possible pour le décapage au jet de sable et comme sable de moulage de fonderie
Inco Metals Company, Thompson (Man.)	nickel, cuivre	Stériles : principalement du quartzite, certaines utilisations comme ballast de voie ferrée.
Tantalum Mining Corporation of Canada Limited, Bernic Lake (Man.)	tantale, césium, lithium	Stériles : principalement du quartz, du mica, du feldspath; utilisation secondaire en tant que pierre décorative en aménagement paysager.
Cominco Ltée, Kimberley (C.-B.)	zinc, plomb	Stériles : principalement de l'argilite siliceuse; les flottants des usines de séparation en milieu dense sont utilisés comme ballast de voie ferrée (350 000 t/a; plus de 20 mm) et pour la construction des routes.
Princeton Mining Corporation, Princeton (C.-B.)	cuivre	Stériles : principalement volcaniques; denses, homogènes, renfermant des sulfures à grain fin; employés localement par le ministère de la Voirie pour la construction des routes; utilisation possible dans les matériaux de construction et comme agent d'absorption de l'huile.

µm : micromètre; t/a : tonnes par an; mm : millimètre.

TABLEAU 3. APPLICATIONS POUR LES DÉCHETS DES MINES DE MÉTAUX PRÉCIEUX

Société	Métal	Déchets – utilisations actuelles ou possibles
En général	or, argent	Stériles : taille et composition variables. Résidus : broyés finement, 80 % de moins de 150 µm, habituellement avec une teneur élevée en quartz, avec d'autres silicates, carbonates, etc.; faible teneur en sulfures métalliques (pyrite, pyrrhotine).
Agnico-Eagle Mines Limited, Cobalt (Ont.)	argent	Stériles : sédiments ou roches volcaniques intermédiaires ayant subi une certaine transformation dans leur composition minérale ou chimique par métamorphisme; principalement utilisés comme matériau de remblayage et ballast de voie ferrée.
Dome Mines Ltd., South Porcupine (Ont.)	or	Résidus : principalement du quartz et du feldspath; utilisation possible dans la fabrication de blocs et de briques.

µm : micromètre.

TABLEAU 4. APPLICATIONS POUR LES DÉCHETS DES MINES DE FER

Société	Déchets – utilisations actuelles ou possibles
En général	Stériles : taille et composition variables. Résidus : habituellement broyés finement, 60 à 90 % de moins de 150 µm, mais peuvent être plus gros selon le type de traitement; grande variété de minéraux sous forme de roches, dont d'importantes quantités d'oxydes et de sulfures métalliques.
Mines Hilton Ltée, Shawville (Québec)	Stériles : principalement des granites; utilisés comme ballast de voie ferrée (500 000 t/a, moins de 40 % de plus de 20 mm), comme agrégat dans le béton et, en général, dans les applications de construction; une étude de l'utilisation des roches et des résidus de moins de 20 mm pour la construction de traverses de voie ferrée en béton est en cours. Résidus : principalement de l'actinolite et de la calcite; des études de CANMET indiquent que ce matériau convient à la fabrication des briques réfractaires pressées à sec.
Compagnie minière IOC, Schefferville et Sept-Îles (Québec)	Stériles : formation à faible teneur en fer (40 % de fer, 30 % de silice); utilisés comme ballast de voie ferrée. Résidus : principalement du quartz et de l'argile; pourraient être employés comme pigments dans les peintures et dans la fabrication de la céramique.
La Compagnie minière Québec Cartier, Sept-Îles (Québec)	Résidus : principalement du quartz (88 %) et de l'hématite (11 %); emploi minime comme agrégat dans le béton et l'asphalte.
QIT-Fer et Titane Inc., Tracy (Québec)	Résidus : principalement d'un plagioclase et de l'ilménite; servent de matériau granulaire pour les toitures; le reste est utile comme agrégat ou produit d'apport dans l'asphalte et le béton.
Cliffs of Canada Limited, Temagami (Ont.)	Stériles : principalement des silicates de fer, du feldspath, du mica; employés en grande partie dans la construction des routes et des digues; utilisation possible comme ballast de voie ferrée.
Marmoraton Mining Co., Marmora (Ont.)	Stériles : principalement du calcaire, de la syénite, des *trapps*; les *trapps* servent d'agrégat dans les mélanges asphaltiques; utilisation possible des types de stériles séparés comme agrégat de construction et agrégat dans le béton. Résidus : principalement du calcaire et de la syénite (40 % d'oxyde de calcium, 40 % de silice); utilisation possible dans la fabrication de briques réfractaires pressées à sec.

µm : micromètre; t/a : tonnes par an; mm : millimètre; *CANMET* : Centre canadien de la technologie des minéraux et de l'énergie.

TABLEAU 5. APPLICATIONS POUR LES DÉCHETS DES MINES DE MINERAUX INDUSTRIELS

Société	Minéral	Déchets – utilisations actuelles ou possibles
En general		Stériles : taille et composition variables Résidus : la plupart des mines de minéraux industriels ne produisent pas de grandes quantités de résidus (sauf les mines de potasse et d'amiante); si des résidus sont produits, ils sont d'habitude finement divisés ou encore de composition uniforme, et ne renferment pratiquement aucun sulfure métallique.
Mines d'amiante, Cantons de l'Est (Québec)	amiante	Résidus : principalement de la serpentine non fibreuse et des minéraux associés (40 % de magnésie, 40 % de silice); actuellement utilisés comme matériau de remblayage des routes et dans l'asphalte; utilisation possible dans la fabrication de briques, de laine minérale et d'engrais.
Baker Talc Ltd., Bolton-Sud (Québec)	talc	Résidus : principalement de la magnésite ferrugineuse et du talc; utilisation possible comme produit d'apport minéral inerte et revêtement des granules d'engrais, afin d'empêcher qu'ils collent et afin d'ajouter du magnésium aux sols.
St. Lawrence Columbium and Metals Corp., Oka (Québec)	oxyde de colombium	Résidus : principalement de la calcite et du quartz; utilisation possible comme produit d'apport minéral, additif et neutralisateur pour les sols, et neutralisateur pour les effluents acides.
Indusmin, division de la Falconbridge Limitée, Midland (Ont.)	silice	Résidus : quartz (99 % de silice); utilisés comme additif dans les blocs de béton traités à l'autoclave; utilisation possible comme matière de charge dans la peinture et les plastiques et dans la fabrication de briques silico-calcaires.
Minnesota Minerals Ltd., Havelock (Ont.)	*trapps*	Résidus : principalement des trapps (45 % de silice, 22 % d'alumine); utilisation possible comme produit d'apport dans l'asphalte et pour la fabrication de laine minérale.

Baroid of Canada Ltd., Souris-Macleen (C.-B.)	barytine	Résidus : principalement du schiste argileux et de la dolomite convenables comme produit d'apport dans la construction et l'entretien des routes.
Ideal Basic Industries, Inc., Vananda (C.-B.)	calcaire	Déchets de stériles : principalement de la roche filonienne provenant des carrières de calcaire; aussi déchets de stériles traités provenant d'anciennes mines de fer; les marchés sont le remblayage des routes, la pierraille et les agrégats; 100 000 t/a.
Université de Sherbrooke, Sherbrooke (Québec)	calcaire dolomitique	Résidus : déchets de criblage de l'usine d'agrégats de Saint-Eustache; utilisés dans l'asphalte et comme matériau de remblayage; études en cours sur l'utilisation dans les bétons à haute résistance.

t/a : tonnes par an.

TABLEAU 6. APPLICATIONS POUR LES DÉCHETS DES MINES DE CHARBON

Société	Déchets – utilisations actuelles ou possibles
En général	Stériles/résidus : la taille des rebuts varie de 100 mm ou plus jusqu'à celle de matières très fines; pourcentage élevé d'argile et de schiste argileux avec quantités variables de charbon.
Société de développement du Cap-Breton (SDCB), usine de Victoria Junction, Sydney (N.E.)	Stériles : schiste argileux, grès, pyrite; utilisés en petites quantités dans le ciment portland et, de façon expérimentale, dans la fabrication d'agrégats légers.
Coleman Collieries Ltd., Coleman (Alb.)	Résidus : principalement du schiste argileux; rebuts de l'usine de lavage servant comme assiette de route et dans la construction des barrages.
Les Charbons Fording, Limitée, Elkford (C.-B.)	Stériles : grès, argile-gréseux, limon compact; utilisés dans la construction des routes et des digues; utilisation possible dans la fabrication des agrégats légers. Résidus : combustible possible pour alimenter les centrales électriques thermiques.

mm : millimètre.

2.1.5 Cendres volantes

Les cendres volantes sont produites par la combustion du charbon servant à générer de l'électricité dans des centrales en Nouvelle-Écosse, au Nouveau-Brunswick, en Ontario, au Manitoba, en Saskatchewan et en Alberta.

Chimiquement, les cendres volantes constituent un mélange hétérogène de composés cristallins et amorphes de silice, d'aluminium et d'oxyde de fer, renfermant des proportions variables d'oxyde de calcium et d'autres éléments secondaires. La composition d'une cendre donnée dépend largement de celle de la partie inorganique du charbon dont elle est dérivée. Physiquement, les particules de cendres volantes sont principalement de forme sphérique et ont un diamètre variant entre 1 et 150 µm.

La production annuelle de cendres volantes est de l'ordre de 2 Mt, dont environ 5 % servent d'adjuvant pouzzolanique dans le béton, de façon à remplacer en partie le ciment portland. Bien que l'emploi des cendres volantes dans le béton augmente, la consommation totale à cette fin ne dépasse probablement pas 10 % de la production de cendres volantes sur n'importe lequel des marchés régionaux.

D'autres utilisations de cendres volantes, y compris leur application dans la fabrication d'agrégats légers ou comme sol-ciment dans la construction des routes, sont actuellement en cours de développement.

On a aussi étudié la récupération du vanadium (1,4 %) et du nickel (0,7 %) des cendres volantes produites par la combustion du coke récupéré dans la partie asphaltique des sables bitumineux à Fort McMurray (Alb.).

2.1.6 Ampleur du problème de restauration

Pour les besoins des politiques, on peut diviser les problèmes de restauration en deux catégories :

(*a*) Restauration traditionnelle ou normale, dans laquelle les déchets et les résidus ne sont pas réactifs;

(*b*) Situations dans lesquelles les déchets contiennent des minéraux sulfurés et provoquent un drainage minier acide (DMA).

La restauration traditionnelle ou normale suppose l'élimination de tous les bâtiments, les services publics et l'équipement, l'obturation de toutes les ouvertures, l'aplanissement des excavations et des piles de déchets ainsi que la construction d'installations de drainage appropriées et la mise en place d'une couverture de végétation durable pour prévenir l'érosion et les problèmes causés par la poussière. Certains de ces travaux peuvent être exécutés pendant que la mine est en exploitation, tandis que les autres le sont après sa fermeture. La restauration après la fermeture de la mine est généralement de courte durée, notamment de un à quatre ans. La plupart de ces activités relèvent des domaines du génie minier et du génie civil, et leurs coûts peuvent être estimés assez précisément.

Dans le second cas, la restauration est beaucoup plus difficile et coûteuse. En plus des travaux ci-dessus, il pourra être nécessaire de construire un système de confinement ou de capture des effluents de DMA; ce système devra être aussi capable de les traiter. Lorsque ces installations sont convenablement exploitées et entretenues, elles sont habituellement suffisantes pour

éviter tout impact environnemental néfaste à un traitement plus poussé. Toutefois la génération d'acide peut persister pendant des centaines d'années après la fermeture de la mine. L'exploitation des usines de traitement pendant des périodes de temps aussi longues est coûteuse et bien évidemment non souhaitable. L'estimation des coûts d'exploitation de telles installations pendant de longues périodes de temps, avec une quelconque précision est pour le moins difficile.

Par conséquent, il est nécessaire de créer de nouvelles technologies pour résoudre de façon permanente et économique le problème du drainage minier acide. Conscients d'un tel besoin, les gouvernements canadiens et l'industrie ont mis sur pied un programme conjoint, le Programme de neutralisation des eaux de drainage dans l'environnement minier (Programme NEDEM), dans le but de coordonner les recherches dans ce secteur. Le groupe de travail de la Colombie-Britannique sur le drainage minier acide en est un autre qui coordonne les recherches sur les problèmes de drainage acide propres à cette province.

On a estimé que les déchets produisant des substances acides couvrent 15 000 hectares (ha) de terrain au Canada. En Ontario, on a identifié 100 mines abandonnées importantes, dont 20 sites présentent des risques de DMA. On a estimé que ces 20 mines renfermaient 55 Mt de résidus de sulfure réactif, déposés sur une superficie de 830 ha.

Au Québec, il y a environ 107 grandes mines abandonnées et 21 d'entre elles, s'étendant sur une superficie estimée à 4500 ha, ont été classifiées comme sites contenant des déchets dangereux à cause du drainage acide. La province de la Colombie-Britannique détient environ 72 Mt de résidus produisant des substances acides, soit environ 4 % du total canadien. Toutefois, on y trouve également environ 250 Mt de déchets de stériles produisant des substances acides (80 % du total canadien), une quantité qui augmente d'environ 25 Mt/a.

2.1.7 Le Programme NEDEM

Le Programme NEDEM a été créé en 1988 dans le but de développer des technologies visant à prévenir et à contrôler le drainage minier acide. Il a pour mission d'étudier les processus entraînant du drainage acide et d'établir des techniques permettant de le contrôler. *CANMET* apporte une contribution majeure au projet d'une valeur de 12,5 millions de dollars et d'une durée de cinq ans. L'industrie minière canadienne, Environnement Canada, Affaires indiennes et du Nord Canada, et les provinces de la Colombie-Britannique, du Manitoba, de l'Ontario, du Québec et du Nouveau-Brunswick y participent également. La majorité des minéraux sulfurés extraits au Canada proviennent de ces provinces. Les activités de recherche du Programme NEDEM portent principalement sur la prédiction, la prévention et le contrôle, le traitement, la surveillance, les transferts de technologie et les rapports internationaux. Ces activités comprennent entre autres :

(*a*) Le développement de méthodes améliorées de prédiction et de modélisation de la génération d'acide par les déchets renfermant des sulfures;

(*b*) L'évaluation de diverses technologies visant à réduire ou à prévenir l'altération des résidus;

(*c*) L'application de procédés chimiques, biologiques, et autres pour le traitement du DMA, la capture des métaux lourds et la stabilisation des boues provenant des installations actuelles de fabrication de la chaux.

2.1.8 Possibilités et perspectives

Bien que pratiquement tous les déchets minéraux canadiens ne puissent jamais avoir une valeur commerciale, il en existe par contre certains qui pourraient avoir une valeur comme source de remplacement ou source supplémentaire de matière première minérale, particulièrement sur les marchés traditionnels des minéraux industriels ou non métalliques. L'intérêt à l'égard de tels déchets s'accroît et continuera de le faire à mesure que les gisements de minéraux à haute teneur et facilement accessibles seront exploités jusqu'à leur épuisement. De même comme cela se passe dans certains centres urbains, ces déchets minéraux deviennent plus intéressants lorsque l'exploitation des carrières est restreinte par des règlements locaux.

L'utilisation des déchets plutôt que l'élimination constitue une solution attrayante, car les coûts d'élimination et les risques de pollution sont ainsi réduits ou même annihilés; en plus, les ressources sont conservées. Des contraintes d'ordre technique et économique limitent dans une grande mesure l'utilisation de certains déchets minéraux. La distance des marchés à potentiel, la quantité et la qualité des matières disponibles, la facilité de récupération, les coûts de transport, la demande du marché et les spécifications constituent un ensemble de facteurs sur lesquels on s'appuie pour décider si les déchets seront ou non récupérés et réutilisés.

La consommation d'énergie entre aussi en ligne de compte et peut constituer un facteur positif, puisque ces déchets ont déjà été extraits et partiellement traités. Dans certains cas, il est faisable d'organiser un transport en vrac peu coûteux des déchets par bateau ou péniche, ou encore peut-être d'obtenir des tarifs ferroviaires plus favorables sur des trains-blocs ou par transport de retour.

D'une part, le marché peut exiger que les caractéristiques physiques de la matière (taille des particules ou distribution des tailles) soient modifiées pour répondre à une utilisation ou à une application possible. D'autre part, les caractéristiques chimiques exigées pour les matières premières destinées à un emploi particulier peuvent être inutilement strictes. Par conséquent, le producteur peut être obligé d'entreprendre un traitement supplémentaire, ou encore le consommateur peut avoir à modifier les spécifications afin de pouvoir utiliser certains déchets.

Étant donné que la plupart des activités réussies de retraitement ne récupèrent qu'une petite portion du volume total des déchets, le problème de l'élimination du reste des déchets demeure donc. Comme les règlements courants régissant l'élimination des déchets miniers sont généralement plus stricts que ceux en vigueur au moment où les déchets ont été accumulés, le retraitement, le stockage et la récupération conformément aux normes modernes de protection de l'environnement sont bénéfiques au milieu (voir section 3.1 ci-dessous).

Bien que l'intérêt à l'égard des déchets minéraux augmente, il n'en est pas moins tempéré par le fait qu'il existe très peu de documentation publiée sur la nature fondamentale de ces déchets ou encore sur leurs disponibilité et usages possibles. On constate un manque de spécifications visant à encourager une utilisation plus vaste de tels déchets. Divers organismes canadiens et étrangers encouragent des activités visant à pallier ce manque d'information : le *Mineral Waste Utilization Symposia*, financé par le *Bureau of Mines* des États-Unis et l'*Institute of Technology Research* de l'Illinois (situé à Chicago), le *Canadian Waste Materials Exchange* de l'*Ontario Research* et enfin *CANMET*, avec sa série de rapports sur les déchets minéraux.

2.2 Risques environnementaux crees par les déchets miniers

2.2.1 Pollution de l'air

Sous l'effet des intempéries, les poussières des terrils et des dépôts de résidus peuvent contaminer les regions immediatement sous le vent (jusqu'a plusieurs kilometres de la mine). La composition de la poussière est particulière au site et dépend aussi de la geologie et des procedes d'extraction utilises à l'emplacement. La poussière peut contenir des elements dont a toxicité pour l'être humain et les plantes a eté prouvée : aluminium, arsenic, beryllium, calcium cadmium, chrome, cobalt, cuivre, fer, plomb, manganese, mercure, molybdène, nickel, thorium tungstène, vanadium et zinc.

Les gaz produits par la fonte du minerai sulfuré contiennent des oxydes de soufre, dont on a prouve les effets sur la vegetation dans un rayon de 30 kilometres de l'usine de fusion. L'installation est située dans les regions de Sudbury et de Wawa, en Ontario.

2.2.2 Pollution de l'eau

Nous avons déjà indiqué que les terrils miniers dans lesquels des minéraux sulfurés étaient exposés à l'air et à l'eau pouvaient générer des solutions acides renfermant des metaux lourds extrêmement toxiques. Si ces solutions du drainage minier acide ne sont pas confinees ou neutralisées, elles risquent de contaminer les eaux de surface et les eaux souterraines à proximité de la mine. Le drainage des eaux provenant des dépôts de résidus miniers peut être acide, renfermer des métaux toxiques ou encore contenir des résidus de produits chimiques utilises dans le traitement. Si ces eaux s'écoulent dans l'environnement sans être convenablement traitées, elles risquent de causer de vastes dommages à la flore et à la faune aquatiques.

2.2.3 Émissions radioactives

Les terrils, les dépôts de résidus et les stocks de réserve de minerai des mines d'uranium peuvent être la source d'émissions radioactives.

2.2.4 Risques d'effondrement

Les effondrements des terrils miniers peuvent causer des morts catastrophiques, comme cela a été le cas lors de l'effondrement en 1966 sur une école primaire du terril de la mine de charbon d'Aberfan, au pays de Galles. L'effondrement récent d'une digue de résidus à proximité de Matachewan (Ont.) a provoqué un écoulement du sable et de la vase renfermant des métaux lourds dans la rivière Montreal.

2.3 Dépôts de résidus abandonnés

Le terme «dépôt de résidus abandonné» désigne tout dépôt de résidus miniers sur lequel on n'effectue plus aucun travail. Les dépôts de résidus peuvent avoir ou ne pas avoir fait l'objet de travaux de restauration avant leur abandon. Un dépôt peut encore appartenir a une societé miniere active, ou encore la propriété peut avoir été retournée à la Couronne.

La situation idéale se compose du facteur suivant : les dépôts de résidus, avant d'être abandonnés, doivent subir des restaurations afin de protéger l'environnement. Malheureusement, un grand nombre de dépôts de résidus abandonnés n'ont pas eté convenablement restaures, et ils continuent de présenter une partie ou la totalité des risques environnementaux decrits à la section 2.2 ci-dessus.

La restauration d'un dépôt de résidus abandonné, dangereux pour l'environnement peu constituer une activité importante, difficile et coûteuse. Dans certains cas, le retraitement de dépôts abandonnés a été envisagé comme une activité économiquement viable, une partie du chiffre d'affaires pouvant servir à payer les dépenses de restauration des résidus pour assainir l'environnement.

On estime qu'il existe plus de 6000 dépôts de résidus abandonnés au Canada. A l'heure actuelle, nous ne connaissons ni les quantités de matières stockées dans ces dépôts de résidus abandonnés ni la gravité des dangers qu'ils peuvent présenter pour l'environnement.

3. ASPECTS PRATIQUES DU RETRAITEMENT DES RÉSIDUS MINIERS

Ce chapitre traite de la faisabilité économique du retraitement des résidus miniers.

3.1 Exemples récents de projets canadiens de retraitement des résidus réalisés ou proposés

Les tableaux 7 présentent des données sur 11 projets de retraitement des résidus qui ont été réalisés ou proposés au Canada au cours des dernières années.

Parmi ces onze projets, sept ont pour but la récupération de l'or; un, la récupération de minerai de fer (magnétite); un, la récupération d'amiante; un, la récupération de plomb et de zinc et enfin le dernier, la récupération de magnésium métal provenant de résidus d'amiante. Dix de ces projets ont été conçus pour produire un profit, le nettoyage environnemental étant un facteur secondaire. Quatre ont été rentables, quatre ne sont pas encore en production – les coûts d'exploitation de l'un d'entre eux auraient été récupérés au cours de la dernière année d'exploitation seulement – et enfin deux projets ont été des échecs commerciaux et environnementaux. Les dépenses en immobilisations de ces projets vont de moins de un million de dollars à plus de 400 millions.

Le retraitement des résidus ne produit habituellement pas une réduction importante de la quantité des résidus à éliminer. Dans le cas des résidus de mines aurifères, la quantité de matière extraite (or) par l'activité de retraitement est d'environ 0,0001 % du poids total des résidus. Le reste des 99,9999 % du dépôt de résidus continuent de représenter un danger possible pour l'environnement. Toutefois, si les résidus retraités sont stockés dans un bassin dont les qualités environnementales sont supérieures à celles du bassin original, on obtient une certaine amélioration sur le plan environnemental.

Le projet proposé Magnola (tableau 7d) est remarquable, car il réduira la quantité de déchets d'environ 15 %.

Le projet de retraitement des résidus aurifères d'Eastmaque (tableau 7b) extrait de l'or par production d'un concentré obtenu par flottation et renfermant principalement de la pyrite, dans laquelle la majorité de l'or se trouve. Ce concentré de pyrite est transporté par camion à l'usine de fusion Horne à Rouyn-Noranda. Dans ce cas, l'élimination du bassin de résidus d'Eastmaque d'une partie de la pyrite capable de produire des substances acides est en fait bénéfique à l'environnement.

TABLEAU 7a. PROJETS DE RETRAITEMENT DE RÉSIDUS AU CANADA

Société	Ressources ERG Inc.	Giant Yellowknife Mines Limited	LAC Minerals Ltd
Projet	Ancien bassin à résidus de la région de Timmins	Retraitement des résidus	Résidus de Lake Shore
Emplacement	Timmins (Ont.)	Yellowknife (T. N.-O.)	Kirkland Lake (Ont.)
Produit	Or	Or	Or
Capacité		10 000 t/j	750 t/j
Réserves	170 Mt titrant 0,432 g/t d'or	7 Mt titrant 2,3 g/t d'or	3,3 Mt titrant 2,6 g/t d'or
Début	Octobre 1988	Mai 1988	Janvier 1989
Fin	Automne 1989	Octobre 1990	
Situation actuelle	Entretien et maintenance depuis avril 1990	Exploitation terminée	Exploitation en cours
Dépenses en immobilisations	78 millions de dollars	25,5 millions de dollars	11 millions de dollars
Coûts d'exploitation	Prévus à 5,63 $ US/g d'or	Prévus à 5,78 $/t, déclarés à 8,03 $/g en 1988	Budgété à 4,50 $/g
Méthode d'extraction	Contrôleurs de l'activité de l'eau	Extraction en été seulement	Dragage
Procédé de traitement	Flottation, rebroyage, cyanuration, adsorbtion par le charbon actif	Adsorbtion par le charbon actif	Usine de traitement de Macassa
Production	Estimée à 529 kg d'or en 1988	687 kg d'or en 1989	
Rentable (?)	Non	Rentabilité atteinte au cours de la dernière année	Rentabilité présumée
Remarques	Désastre financier et environnemental attribuable à la teneur trop faible de la charge d'alimentation, à l'insuffisance de la capacité et de la récupération métallurgiques		

g/t : gramme la tonne; Mt : millions de tonnes; $ US/g : $ US le gramme, $/t : $ la tonne; kg : kilogramme, t/j : tonnes par jour

TABLEAU 7b. PROJETS DE RETRAITEMENT DE RÉSIDUS AU CANADA

Société	Eastmaque Gold Mines Ltd.	Candorado Mines Ltd. et Cantrell Resources Ltd	Sikaman Gold Resources Ltd
Projet		Résidus de la mine Nickel Plate	Projet High River Gold Mines
Emplacement	Kirkland Lake (Ont.)	Hedley (C.-B.)	Snow Lake (Man.)
Produit	Or	Or	Or
Capacité	2270 t/j passant à 2500 t/j		
Réserves	7 Mt titrant 1,3 g/t d'or	1,5 Mt titrant 1,4 g/t d'or	274 000 t titrant 12,9 g/t d'or
Début	Décembre 1987	Novembre 1988	Proposé pour 1991
Fin	1999 (?)		
Situation actuelle	En exploitation	En exploitation	Financement recherché
Dépenses en immobilisations	10,5 millions de dollars	3,2 millions de dollars	17 millions de dollars
Coûts d'exploitation	7,07 $ US/g d'or		42,86 $/t
Méthode d'extraction	Dragage toute l'année		
Procédé de traitement	Flottation	Lixiviation en tas	Procédé Arseno et cyanuration
Production	56 kg d'or par mois	25 kg d'or en 1989	
Rentable (?)	Profits d'exploitation de 865 000 $ au cours des quatre premiers mois	Probablement	Peut être
Remarques	L'élimination de la pyrite des résidus est bénéfique à l'environnement.		Améliorera l'environnement par réduction des agents de lixiviation à l'arsenic présents dans les résidus actuels.

t/j : tonnes par jour; g/t : gramme la tonne; $ US/g : $ US le gramme; k : kilogramme, Mt : millions de tonnes

TABLEAU 7c. PROJETS DE RETRAITEMENT DE RÉSIDUS AU CANADA

Société	Sumac Ventures Inc.	Craigmont Mines Limited	Baie Verte Reprocessing Inc
Projet	Projet Old Union		Projet de traitement par voie humide
Emplacement	Grand Forks (C.-B.)	Merritt (C.-B.)	Baie Verte (T.-N.)
Produit	Or	Magnétite (minerai de fer)	Chrysotile (amiante)
Capacité	91 000 t titrant 1,7 g/t d'or	136 t/j de résidus	
Réserves			
Début	1988	Novembre 1969	Août 1990
Fin	Juin 1989	Novembre 1982	An 2010 (?)
Situation actuelle	Fermé	Entrée en exploitation possible en 1992	Exploitation interrompue en raison d'un litige entre les propriétaires
Dépenses en immobilisations			22 millions de dollars
Coûts d'exploitation			
Méthode d'extraction			
Procédé de traitement		Séparation magnétique	
Production		1 Mt de concentré de magnétite (1969 à 1982)	
Rentable (?)		Rentabilité présumée	On ne sait pas
Remarques	Fermé après que l'inspecteur de gestion des déchets a détecté du cyanure dans les puits d'essai.		

t : tonnes; g/t : gramme la tonne; t/j : tonnes par jour, Mt : millions de tonnes

TABLEAU 7d. PROJETS DE RETRAITEMENT DE RÉSIDUS AU CANADA

Société	Noranda Minerals Inc. et Lavalin Inc.	Curragh Resources Inc.
Projet	Projet Magnola	Dépôt de résidus de Rose Creek
Emplacement	Thetford Mines (Québec)	Faro (Yukon)
Produit	Magnésium	Zinc, plomb, argent
Capacité	50 000 t/a de magnésium	
Réserves		40 Mt (?) titrant 3 % de plomb zinc
Début	Milieu des années 90	An 2006 (?)
Fin		(?)
Situation actuelle	Essai du procédé	Plan d'abandon proposé
Dépenses en immobilisations	400 millions de dollars	5,4 millions de dollars
Coûts d'exploitation		6,50 $/t
Méthode d'extraction		Monitor et pompe à boue
Procédé de traitement		Broyage et flottation
Production		
Rentable (?)		Devrait être rentable.
Remarques		Les résidus risquant de produire des substances acides seront placés dans la mine à ciel ouvert de Faro et stockés sous l'eau afin de prévenir le drainage acide.

t/a : tonnes par an, Mt : millions de tonnes, $/t : $ la tonne

Les résidus de métaux communs ont été retraités avec succès à la mine de cuivre Craigmont de Merritt (C.-B.) entre 1969 et 1983 (voir tableau 7c). La magnétite (minerai de fer) était récupérée des résidus de la mine de cuivre et vendue à des usines de lavage de charbon, qui l'utilisaient dans un procédé de séparation en milieu dense par flottants et plongeants. On a récupéré 1 Mt de magnétite à partir d'environ 35 Mt de résidus.

La proposition de la Curragh Resources Inc. (tableau 7d) de retraiter les résidus stockés dans la vallée Rose Creek de la mine de zinc-plomb de Faro a été soumise dans le cadre du plan d'abandon exigé pour l'obtention du permis d'utilisation d'eau émis par le ministre des Affaires indiennes et du Nord canadien. On estime qu'environ 40 Mt de résidus renferment du plomb, du zinc et de l'argent, et ont une valeur brute d'environ 1,5 milliard de dollars. Ces résidus peuvent produire des substances acides, et le coût de prévention du drainage minier acide (DMA) dans la vallée Rose Creek a été évalué à environ 29 millions de dollars. Le retraitement fait partie d'un programme de transport des résidus de la vallée Rose Creek, où le DMA peut poser un problème, dans le but de les stocker dans l'ancienne mine à ciel ouvert Faro, où ils seront conservés sous l'eau, de façon à ne pas être dangereux pour l'environnement. On ne prévoit pas que le retraitement sera rentable; il devrait cependant générer suffisamment de fonds pour couvrir les coûts d'exploitation. Comme le projet de retraitement pourra servir à réduire dans une grande mesure le coût définitif des obligations de restauration de la Curragh, on peut considérer qu'il constitue une proposition économiquement viable.

Sans contrôle adéquat, l'addition de produits chimiques de traitement aux anciens dépôts de résidus peut entraîner une dégradation environnementale. La Sumac Ventures Inc. (tableau 7b) a extrait de l'or par lixiviation en tas d'anciens résidus miniers. L'installation a été fermée lorsque les inspecteurs de gestion des déchets ont détecté des traces de cyanure qui s'échappait des puits d'essai périphériques.

Le retraitement des anciens dépôts de résidus qui ont déjà été restaurés et sur lesquels la végétation a été rétablie provoque une dégradation temporaire de l'environnement (c'est-à-dire de plusieurs années). Si l'activité de retraitement constitue un échec financier, ce qui a été le cas de la société Ressources ERG Inc. (tableau 7a), et si les fonds nécessaires à la restauration n'existent pas, il peut y avoir de nombreuses années de contestation et de litiges avant que le dépôt de résidus soit remis dans l'état où il se trouvait avant le début de l'activité de retraitement.

3.1.1 Exemples récents de projets étrangers de retraitement des résidus réalisés ou proposés

Le tableau 8 donne une liste partielle d'environ 30 projets étrangers de retraitement des résidus, actuellement en cours de production. Onze se trouvent en Afrique du Sud et neuf sont en Australie, tous pour la récupération de l'or. Du plomb et de l'argent sont récupérés en Espagne; du cuivre, de l'or et de l'argent, aux États-Unis, et enfin du cuivre, en Zambie.

La plus grande et la plus rentable des exploitations de retraitement des résidus dans le monde est probablement celle de l'East Rand Gold (ERGO) en Afrique du Sud. L'ERGO a commencé à traiter en 1976 les anciens résidus des mines aurifères à proximité de Johannesburg; elle extrait de l'or, de l'argent, de l'uranium et de la pyrite. La pyrite est transformée en acide sulfurique, qui est vendu. On réduit ainsi les risques de drainage acide causé par les résidus. Le bassin actuel où l'on stocke les résidus devrait réduire la poussière et assurer que le cyanure provenant des solutions de retraitement ne s'introduit pas dans les rivières et les ruisseaux.

TABLEAU 8. LISTE PARTIELLE DE PROJETS ÉTRANGERS DE RETRAITEMENT DES RÉSIDUS

Pays	Nom du projet	Emplacement	Produits minéraux extraits
Australie	Buniyong	Victoria	Or
	Charters Towers	Queensland	Or
	Cobar Tailings	Nouvelle-Galles du Sud	Or
	Gwalia Tailings	Australie-Occidentale	Or
	Kalgoorlie Tailings	Australie-Occidentale	Or
	Mount Morgan	Queensland	Or
	Sunburst	Queensland	Or
	Trafalgar et Lancefield	Australie-Occidentale	Or, argent
	Warrego	Territoire du Nord	Cuivre, or, bismuth
Chili	Punitaq		Cuivre
Afrique du Sud	Daggafontein	Transvaal	Or, argent
	ERGO	Transvaal	Or, argent, uranium
	Freegold	État libre d'Orange	Or, uranium
	Gazankulu	Transvaal	Or
	Knights	Transvaal	Or
	Nigel	Transvaal	Or
	Nugo; Rand Mines Milling and Mining	Transvaal	Or
	Sallies	Transvaal	Or
	Simmergo	Transvaal	Or, argent
	Village Main Reef	Transvaal	Or
	Waverly	Transvaal	Or
Espagne	Santa Elvira	Jaen	Plomb, argent
États-Unis	Gooseberry	Nevada	Argent, or
	Cripple Creek	Colorado	Or
	Eldorado Canyon	Nevada	Or, argent
	Silver City	Utah	Or
	Magma Copper	Arizona	Cuivre
Venezuela	Mocupia Gorge	Bolivar	Or
Zimbabwe	Cam and Motor	Eiffel Flats	Or
Zambie	Zambia Consolidated Copper Mines Limited	Résidus de Nchanga	Cuivre

À Miami, en Arizona (États-Unis), la Magma Copper Company a commencé en avril 1989 à retraiter les résidus de l'ancienne mine de cuivre de Miami. Ces 34,5 Mt de résidus ont une teneur moyenne en cuivre de 0,33 %. Ils ont été déversés entre 1911 et 1932. La Magma retraite 10 900 t/j de résidus. Les dépenses en immobilisations du projet ont été estimées à 19,6 millions de dollars américains et les coûts d'exploitation, à environ 2,50 $ US/t. Le projet est très avantageux pour l'environnement. En effet, il éloigne les résidus d'un cours d'eau situé près de la ville de Miami et il stocke les nouveaux résidus dans une mine à ciel ouvert abandonnée. Ces résidus sont alors sous l'eau et isolés de la nappe phréatique, afin de prévenir les dangers environnementaux du drainage minier acide.

3.2 Les possibilités de retraitement des résidus miniers

3.2.1 Mines de métaux communs

Les résidus des mines de métaux communs renferment généralement très peu de produits pouvant faire l'objet d'activités commerciales de retraitement. Nous avons déjà indiqué que les minéraux sulfurés, tels que la pyrite et la pyrrhotine, que l'on trouve couramment dans les résidus de métaux communs, sont dangereux pour l'environnement, car ils peuvent produire un drainage acide.

Toutefois, certains projets de retraitement des résidus de métaux communs constituent des réussites canadiennes . Il y a le projet remarquable de Craigmont, abordé dans la section 3.1 ci-dessus. Mentionnons aussi l'exemple de la mine Sullivan de plomb-zinc de la Cominco Ltée à Kimberly (C.-B.), où la pyrite et la pyrrhotine sont récupérées directement des résidus à l'intérieur de l'usine de traitement et transformées en acide sulfurique. Cet acide est utilisé avec de la roche phosphatée pour fabriquer de l'engrais. Le principal déchet de ce procédé est le gypse, produit bien moins dangereux et plus facile à stocker que la pyrite et la pyrrhotine.

Au Nouveau-Brunswick, il existe de grands dépôts de résidus de métaux communs renfermant de très vastes quantités de minéraux sulfurés pouvant devenir des sources de soufre, d'acide sulfurique et de métaux accessoires. L'Entente Canada – Nouveau-Brunswick sur l'exploitation minérale prévoit un projet de recherche s'attaquant à ce problème.

CANMET a développé un procédé de lixiviation utilisant le chlorure de fer, qui pourrait améliorer la récupération des métaux des gisements de sulfures complexes du Nouveau-Brunswick et accroître ainsi de 28 à 37 % la valeur du minerai. En outre, ce procédé pourrait s'appliquer au retraitement des résidus. *CANMET* recherche à l'heure actuelle des partenaires dans l'industrie pour construire et exploiter une usine de démonstration, en vue d'éprouver le procédé à l'échelle commerciale.

Le Programme NEDEM envisage de nouvelles utilisations potentielles des concentrés de pyrrhotine et de pyrite. À Sudbury (Ont.), la Falconbridge Limitée et l'Inco Limitée stockent des résidus à haute teneur en sulfure séparément des résidus à faible teneur en sulfure, afin que les premiers soient facilement disponibles si un nouveau procédé est élaboré pour leur retraitement.

Enfin, les résidus de la Newfoundland Zinc Mines Limited à Daniel's Harbour (T.-N.), qui se composent principalement de dolomite minérale, ont été utilisés expérimentalement pour conditionner les sols.

3.2.2 Mines de charbon

Des gisements de charbon existent dans toutes les provinces et dans les territoires canadiens sauf le Québec et l'Île-du-Prince-Édouard. De grandes quantités de charbon sont extraites dans les provinces de la Nouvelle-Écosse et du Nouveau-Brunswick dans l'est, et en Saskatchewan en Alberta de même qu'en Colombie-Britannique, dans l'ouest.

En Nouvelle-Écosse et au Nouveau-Brunswick, les charbons bitumineux thermiques et metallurgiques renferment de 2 % à plus de 8 % de soufre. Par conséquent, ces charbons et même une partie des morts-terrains peuvent générer un drainage minier acide (DMA).

La production et l'accumulation de déchets au Nouveau-Brunswick sont confinées à la région de Minto-Chipman, dans le comté de Queens. On y a produit plus de 38 Mt de charbon et la production actuelle est d'environ 500 000 à 550 000 t/a.

En Nouvelle-Écosse, les déchets des mines de charbon se sont accumulés sur une période de plus de 100 ans. On estime que les anciens terrils renferment 54 Mt de déchets de mines de charbon, dont la plupart se trouvent à proximité de communautés existantes. Au cours des premières années de production, il n'y avait aucun lavage. Les particules de charbon riches en cendres étaient triées à la main et les fines de charbon riches en cendres étaient souvent éliminées par tamisage puis jetées. Ensuite, un lavage partiel des fractions grossières causait des pertes élevées de fines utilisables.

La présence de charbon dans ces terrils crée des risques à la fois environnementaux et de sécurité. Les risques environnementaux dépendent de la nature des résidus et des sous-produits qui finissent par se propager dans les cours d'eau ou dans l'atmosphère. En plus des risques de DMA, il existe aussi le danger de la combustion spontanée. Certaines des communautés de la Nouvelle-Écosse se plaignent depuis longtemps de l'émission de fumée renfermant du bioxyde de soufre produit par la combustion spontanée du charbon.

À l'heure actuelle, environ 94 % du charbon canadien est produit dans l'ouest, principalement par l'exploitation en découverte et dans des mines à ciel ouvert. De grandes quantités de déchets ont été accumulés à proximité des usines de traitement en Alberta et en Colombie-Britannique au cours des 20 dernières années. Dans l'Ouest canadien, les pertes de fines de charbon évacuées avec les résidus sont bien plus importantes en raison de leur proportion élevée dans les charbons tout venant et de la présence occasionnelle de charbon partiellement oxydé. Les circuits de nettoyage des fines constituent habituellement les activités les moins efficaces dans les installations de traitement de charbon. En outre, au début de l'exploitation des nouvelles usines et avant la mise en oeuvre de modifications visant à améliorer la récupération des fines, d'importantes quantités de fines commercialisables étaient jetées dans des bassins à résidus. Au cours des années, il s'est accumulé de grandes quantités, qui ont provoqué des manques d'espace à proximité des usines de traitement, en particulier dans les régions montagneuses. Il en a résulté des risques environnementaux possibles. Comme dans le cas des gisements de l'Est canadien, la présence de charbon dans ces dépôts a aussi créé des risques de combustion spontanée. Par ailleurs, comme les charbons de l'Ouest canadien ont une faible teneur en soufre, le drainage acide de ces dépôts ne pose généralement pas de difficultés majeures.

Le problème des résidus ayant une teneur élevée en charbon n'est pas unique au Canada. Par exemple, aux États-Unis, on estime que 100 Mt de résidus sont ajoutés chaque année aux centaines de millions de tonnes de résidus de charbon déjà déversés sur les sols.

Le retraitement des résidus du charbon dans le but de récupérer du charbon commercialisable peut servir des objectifs économiques et environnementaux (il s'applique principalement aux particules fines). La récupération du charbon des résidus entraîne des coûts d'exploitation minimaux et la marge de profit par tonne peut donc être importante. L'élimination des particules de charbon devrait minimiser les risques mentionnés ci-dessus de combustion spontanée dans que la libération de polluants dans les cours d'eau. En outre, l'élimination devrait réduire la nécessité de trouver de nouveaux emplacements pour les bassins à résidus situés à proximité des installations de préparation.

Des entrepreneurs privés ont récupéré du charbon thermique de terrils de charbon abandonnés en Nouvelle-Écosse au cours des quelques dernières années et ce, à un rythme de 50 000 à 150 000 t/a. La Société de développement du Cap-Breton (SDCB), à Sydney, a exploité d'une manière sélective des terrils pour alimenter des installations de préparation.

Il semble que la société Les Charbons Fording, Limitée, en Colombie-Britannique exploite d'anciens résidus de fines qu'elle expédie directement comme charbon thermique ou qu'elle mélange avec d'autres produits du charbon. La société aurait aussi étudié la faisabilité d'utiliser ces résidus pour alimenter une centrale électrique thermique à l'emplacement de la mine.

Lors d'une étude effectuée dans une usine pilote et entreprise conjointement avec *CANMET*, la Westar Mining Ltd. a étudié les possibilités de retraitement de ses résidus afin de récupérer le charbon thermique. La Westar examine à l'heure actuelle la faisabilité de créer une usine de traitement exploitée sur une base commerciale. La mine Smoky River, à proximité de Grande Cache (Alb.), sèche et expédie ses résidus à une centrale thermique avoisinante et appartenant à l'Alberta Power Limited, en vertu d'un contrat à long terme, en échange du prix du séchage, de la manipulation et de l'expédition des résidus. La société s'est aussi engagée à gérer l'élimination des cendres volantes de la centrale thermique. La quantité de cendres volantes est bien inférieure à celle des résidus.

Aux États-Unis, *The Public Utility Regulatory Policies Act* propose des facteurs d'incitation pour les initiatives du secteur privé concernant la production d'énergie électrique. Toute installation admissible peut passer un contrat avec une société de services publics pour vendre de l'électricité au «coût éludé». La *Federal Energy Regulatory Commission* (commission fédérale de réglementation de l'énergie) reconnaît que les déchets de charbon constituent un combustible admissible pour les petites installations de production d'énergie. On estime que, grâce à la mise en œuvre de la technologie de combustion par lit fluidisé, les dépôts abandonnés des déchets de charbon peuvent être restaurés à la suite d'une excavation et utilisés comme combustible dans des nouvelles centrales électriques. L'incidence de ces types de projets sur la restauration des terrains des mines abandonnées devrait être importante.

3.2.3 Mines de métaux précieux

En 1989, 55 grandes mines d'or au Canada ont traité plus de 26 Mt de minerai et ont produit environ 136 tonnes (t) d'or. Comme la teneur en or ne constitue qu'une petite fraction (en moyenne 5 à 6 parties par million [ppm]) du minerai traité, la grande majorité de ce dernier devient des résidus. Ces résidus s'ajoutent chaque année aux nombreux millions de tonnes déjà accumulés depuis longtemps à travers le pays. Les résidus aurifères sont habituellement constitués d'une matière finement broyée (80 % de taille inférieure à 150 µm), renfermant un pourcentage élevé de quartz, d'autres silicates, de carbonates et de certains sulfures métalliques (pyrite, pyrrhotine).

Les résidus aurifères peuvent être retraités soit dans le but de récupérer une partie de l'or laissé par l'exploitant précédent ou soit dans le but de servir à d'autres applications. Ces dernières peuvent être le remblayage et la fabrication de blocs et de briques. Toutefois ces applications sont plutôt limitées en raison de l'éloignement des résidus par rapport aux marchés possibles de ces produits.

Au cours des dernières années, on a constaté un accroissement important du nombre de projets canadiens de retraitement des résidus des mines d'or. Selon la teneur du minerai original et l'année du traitement, la quantité d'or qui reste dans les résidus peut être suffisante pour un retraitement économiquement viable par le secteur privé, et cela sans assistance du gouvernement. En fait, au cours des quelques dernières années, on a pu se rendre compte que la majorité de tous les projets canadiens de retraitement, déjà entrepris ou envisagés portaient sur des résidus aurifères. Cela s'explique principalement par les prix relativement élevés de l'or ainsi que par des améliorations dans la technologie du traitement.

Le retraitement des résidus aurifères en vue de récupérer l'or laissé par les anciennes usines de traitement n'a qu'un effet très marginal sur l'environnement, puisque la plupart des projets couronnés de succès ne récuperent qu'une très petite fraction de la totalité du volume des déchets. Le problème de l'élimination du reste des déchets demeure. Toutefois, comme les règlements en vigueur régissant l'élimination des déchets miniers sont habituellement plus stricts que ceux qui datent du moment où ces déchets retraités ont été accumulés, l'environnement bénéficie de ces activités de retraitement, de stockage et de récupération des déchets; ces activités sont exécutées conformément aux normes modernes de protection environnementale. En outre, si un autre minéral tel que la pyrite est extrait durant le retraitement des résidus, comme c'est le cas à l'usine d'Eastmaque, on constate une amélioration environnementale considérable attribuable à la réduction des risques de drainage minier acide des résidus. L'utilisation de la nouvelle technologie de retraitement des résidus peut être bénéfique à l'environnement, comme on a pu le constater dans le projet Snow Lake Gold, où le procédé transformera du minerai d'arsenopyrite en de l'arséniate ferrique stable sur le plan environnemental.

3.2.4 Mines d'uranium

Le tableau 9 donne une liste de tous les dépôts de résidus miniers des mines d'uranium exploitées et non exploitées au Canada. Il existe deux dépôts de résidus d'uranium dans les Territoires du Nord-Ouest, six en Saskatchewan et quatorze en Ontario.

En plus de tous les problèmes créés par les autres types de résidus, les résidus des mines d'uranium présentent également des risques de radioactivité. La radioactivité dans les résidus de mines d'uranium est causée partiellement par l'uranium résiduel qui n'a pas été récupéré par l'usine d'extraction d'uranium. Elle est causée principalement par la famille de produits de désintégration du thorium, du radium et du radon, qui sont tous présents dans les minerais d'uranium, mais qui ne sont pas habituellement récupérés par le procédé d'extraction. Le radium est soluble dans l'eau et le radon est un gaz. Tous ces produits radioactifs sont plus ou moins dangereux pour la santé.

Les résidus d'uranium renferment de petites quantités d'or, de nickel, de titane, de thorium et de terres rares. À la mine Cluff Lake, en Saskatchewan, le retraitement des résidus de la zone D a permis d'extraire des concentrations économiques d'or. Les possibilités d'extraire du nickel des résidus du lac Key et d'extraire du titane, du thorium et des terres rares des résidus d'Elliott Lake ont été étudiées; on a toutefois déterminé que ces activités n'étaient pas économiquement viables.

TABLEAU 9. RESIDUS DES MINES D'URANIUM AU CANADA

Site / Emplacement	Exploitant Années	Etat de la mine	Volume Mt
Port Radium / T.N.-O.	Eldorado / 1933 à 1960	Non exploitée	0.9
Rayrock / T.N.-O.	Rayrock / 1957 à 1959	Non exploitée	0.1
Lorado / Saskatchewan	Lorado / 1957 à 1960	Non exploitée	0.6
Gunnar / Saskatchewan	Gunnar / 1955 à 1964	Non exploitée	4
Beaverlodge / Saskatchewan	Eldorado / 1953 à 1982	Non exploitée	6
Dyno / Ontario	Canadian Dyno / 1958 à 1960	Non exploitée	0.4
Bicroft / Ontario	Bicroft / 1958 à 1963	Non exploitée	2
Faraday / Ontario	Faraday / 1957 à 1964	Non exploitée	2
Madawaska / Ontario	Madawaska / 1976 à 1982	Non exploitée	2
Nordic / Ontario	Rio Algom Limitée / 1957 à 1968	Non exploitée	13
Lacnor / Ontario	Northspan / 1957 à 1960	Non exploitée	3
Stanrock-CanMet / Ontario	Stanrock-CanMet / 1957 à 1964	Non exploitée	7.5
Spanish American / Ontario	Northspan / 1957 à 1960	Non exploitée	0.5
Pronto / Ontario	Pronto / 1955 à 1960	Non exploitée	5
Agnew Lake / Ontario	Agnew Lake / 1977 à 1983	Non exploitée	2.5
Panel / Ontario	Rio Algom Limitée / 1958 à 1961 et 1978 à 1990	Non exploitée	14
Quirke / Ontario	Rio Algom Limitée / 1956 à 1961 et 1968 à 1990	Non exploitée	42
Denison / Ontario	Denison Mines Limited / 1957 à 1959 et 1960 à maintenant	Exploitée	54
Stanleigh / Ontario	Rio Algom Limitée / 1958 à 1964 et 1983 à maintenant	Exploitée	15
Cluff Lake / Saskatchewan	Amok Ltée / 1980 à maintenant	Exploitée	0.9
Rabbit Lake / Ontario	Corporation Cameco / 1975 à maintenant	Exploitée	Bassin – 6 Puits – 0.3
Lac Key / Saskatchewan	Corporation Cameco /1983 à maintenant	Exploitée	2

3.2.5 Sables bitumineux

Un peu moins de la moitié des gisements de pétrole lourd au monde (estimés à 1 billion de mètres cubes (m^3)) sont situés en Alberta. La majorité des gisements de pétrole lourd sont relativement profonds et ne conviennent pas à l'exploitation à ciel ouvert. Toutefois, dans la région d'Athabaska, en Alberta, il existe plusieurs corps minéralisés importants de sables bitumineux pouvant être exploités à ciel ouvert. La Syncrude Canada Ltd. et la Suncor Inc. exploitent les deux seules usines commerciales de sables bitumineux au monde, à proximité de Fort McMurray (Alb.). L'usine de la Suncor, qui a été mise en service en 1967, a actuellement une capacité de traitement de 40 Mt/a de sables bitumineux. L'usine de la Syncrude, terminée en 1978 au coût de 2,1 milliards de dollars, a maintenant une capacité de traitement de 100 Mt/a de sables bitumineux. La Suncor produit environ 60 000 barils de pétrole synthétique par jour et la Syncrude en produit environ 130 000 barils par jour.

La Syncrude et la Suncor utilisent toutes les deux le procédé Clark à la soude caustique et à l'eau chaude pour extraire le bitume des sables bitumineux. Dans la production de pétrole synthétique à partir de sables bitumineux au moyen de ce procédé, on utilise de grandes quantités d'eau (environ 15 mètres cubes par mètre cube de pétrole synthétique). Comme seulement environ les trois quarts de l'eau altérée par le procédé est disponible pour être recirculée, de grandes quantités de déchets sous forme de boues sont produits. Ces déchets fluides sont stockés dans un bassin à résidus, entourés de digues et de plages construites avec du sable résiduel compacté.

À l'heure actuelle, les deux usines de sables bitumineux de l'Alberta stockent environ 200 millions de mètres cubes dans des bassins, et ce volume augmente à un rythme d'environ 30 millions de mètres cubes par an.

L'extraction de boues mentionnée ci-dessus renferme un mélange de bitume (2 à 5 %), de minéraux (25 à 40 %) et d'eau (55 à 70 %). La Suncor obtient généralement la plus forte concentration de bitume dans les boues. Les boues finales se composent d'une matière semblable à un gel renfermant au moins 30 % de solides. Ces solides empêchent la survie des poissons et de toute autre vie aquatique; de plus, les boues sont trop facilement fluidisées pour supporter un trafic. L'eau résiduelle, qui comporte 70 % de boues, est extrêmement toxique pour les poissons.

La proportion de 2 à 5 % de bitume dans les boues renfermant 70 % d'eau passe à une proportion allant de 7 à 16 % de bitume dans les boues dont on a éliminé l'eau. Par conséquent, tout programme de transfert des boues du bassin à résidus à un dépôt permanent pourrait constituer techniquement une occasion d'extraire le bitume résiduel des boues.

La Carbovan Inc. a récupéré du vanadium et du carbone à Suncor et ce, à partir de cendres volantes. Toutefois, le faible cours du vanadium, des problèmes d'exploitation ainsi que des difficultés techniques et mécaniques ont provoqué l'interruption de ces activités en mai 1991.

La majorité des résidus des usines d'extraction de sables bitumineux se composent principalement de sable siliceux, qui est utilisé pour la fabrication de sable de verrerie. L'enrichissement à l'aide de techniques de séparation magnétique, d'attrition et par gravité permet d'obtenir un sable de verrerie convenant seulement à la fabrication de bouteilles, de plaques de verre, de fenêtres et de verre coloré. Ce sable ne convient pas à la fabrication de vaisselle fine ni à celle de verre optique. Bien que le sable résiduel semble convenir à la fabrication du verre, son coût de préparation et l'impossibilité d'obtenir un sable de verrerie de haute qualité en limite les débouchés commerciaux.

La Suncor planifie à l'heure actuelle un vaste échantillonnage de ses résidus afin d'en évaluer le contenu minéral et de déterminer leur potentiel économique.

3.2.6 Mines de minerai de fer

On ne dispose d'aucun exemple de retraitement des résidus canadiens de minerai de fer. Toutefois, les recherches de *CANMET* ont montré que certains résidus de minerai de fer (Marmoraton, Hilton) pourraient être transformés en briques réfractaires pressées à sec destinées à la construction. Toutefois, ces mêmes études ont aussi montré que les marges de profit prévues étaient trop faibles pour intéresser les investisseurs à ce type de projet.

Les résidus des mines de minerai de fer à proximité de Schefferville (Québec) renferment principalement du quartz et de l'argile, qui sont considérés comme des matières premières possibles pour la fabrication des peintures et des céramiques.

On a envisagé d'utiliser comme dépotoir dans la région de Toronto une mine de minerai de fer qui a récemment été fermée, soit la mine Adams située à Kirkland Lake (Ont.).

3.2.7 Mines d'amiante

L'amiante a été produit dans le Yukon, en Colombie-Britannique, au Québec et à Terre-Neuve. De grandes quantités de résidus ont été accumulés au cours des années, en particulier au Québec. Ces résidus se composent principalement d'oxyde de magnésium et de silice. Il serait possible de retraiter les piles de résidus pour récupérer le reste des fibres de chrysotile laissées par le traitement original du minerai ou bien du magnésium métal.

La récupération des courtes fibres de chrysotile laissées dans les piles de résidus est maintenant possible grâce à un progrès technologique réalisé dans la technique de traitement du minerai. Plus précisément, un nouveau procédé par voie humide a été élaboré et a été mis en œuvre d'une manière effective à Terre-Neuve et en Colombie-Britannique. Le gouvernement fédéral a participé au développement du projet ainsi qu'à la construction de l'usine de traitement par voie humide à Terre-Neuve. Au départ, l'usine traitait principalement des déchets provenant de l'usine par voie sèche et l'on avait prévu de commencer le traitement des anciens résidus; toutefois, la mine à ciel ouvert a fermé en février 1991. L'exploitation a été maintenant interrompue en raison d'un litige entre les propriétaires.

Un autre type de retraitement des résidus d'amiante consiste à récupérer le magnésium métal. On dispose de différentes techniques pour réaliser cette activité. Le projet Magnola au Québec a atteint la phase d'essai en usine pilote; on prévoit que la décision de construire une usine exploitée sur une base commerciale devrait être prise. Les deux niveaux de gouvernement sont associés au secteur privé dans ce projet, qui demandera d'importants investissements.

La récupération des fibres courtes à partir des résidus du procédé par voie sèche n'apportera aucune amélioration à l'environnement sauf si les rebuts du procédé par voie humide sont déchargés dans la mine abandonnée à ciel ouvert. Par ailleurs, l'extraction du magnésium des résidus d'amiante pourrait réduire la quantité des résidus de 10 à 15 %.

3.2.8 Mines de potasse

Les dix mines de potasse de la Saskatchewan et les deux du Nouveau-Brunswick produisent plus de 20 Mt/a de déchets de sel solides. Chaque année, cette quantité s'ajoute à celle dépassant

les 300 Mt de déchets de sel solides qui sont stockés en surface principalement en Saskatchewan. Ces déchets occupent environ une superficie de 1700 ha. La superficie totale occupée par l'exploitation minière de la potasse en Saskatchewan est d'environ 3500 ha et celle des mines souterraines, d'environ 39 000 ha. Les déchets de saumure et la saumure produite par les eaux de pluie s'écoulant sur les piles de sel sont stockés dans de grands bassins pour être évaporés ou injectés dans des puits profonds. En Saskatchewan, de 25 à 55 % de la saumure est injectée dans des aquifères à plusieurs centaines de mètres en dessous du corps minéralisé. La mine Potacan du Nouveau-Brunswick décharge la saumure dans l'océan. À la mine Penobsquis, à proximité de Sussex (N.-B.), la Potasse d'Amenque se débarrasse de la plupart de ses résidus sous terre, où ils servent à remplir les chantiers d'abattage.

Le principal danger environnemental des résidus de sel est que la saumure risque de s'échapper des installations de confinement et peut contaminer alors les sols de surface ainsi que la nappe phréatique. Par ailleurs, lorsque l'on injecte le surplus de saumure dans des aquifères, la saumure risque aussi de s'écouler dans la nappe phréatique. Toutefois, les risques semblent très limités en Saskatchewan, car les aquifères sont profonds et situés en dessous des gisements de potasse. On a malgré tout constaté des migrations souterraines de la saumure à toutes les mines de potasse en Saskatchewan, et, dans certains cas, la saumure a remonté d'une distance allant jusqu'à deux kilomètres dans l'aquifère superficiel.

Tant qu'une mine est en exploitation, on peut mettre en œuvre diverses mesures correctives pour confiner la saumure et prévenir une contamination inacceptable des eaux de surface et des eaux souterraines. Toutefois, on n'a pas encore découvert une méthode satisfaisante qui permettrait d'abandonner les piles de résidus de potasse. Si les méthodes de gestion des déchets n'ont pas changé lorsque toute la potasse récupérable économiquement aura été extraite en Saskatchewan, on prévoit que plus de 200 piles de déchets renfermant 20 milliards de tonnes de déchets de sel et s'étalant sur quelque 1600 kilomètres carrés (km^2) auront été produites. Cependant, les méthodes de gestion des déchets évoluent. Le *Department of the Environment and Public Safety* de la Saskatchewan a déclaré qu'aucun autre terrain, sauf ceux qui sont déjà affectés à cet usage, ne sera approuvé pour le stockage des résidus.

Les résidus produits par le raffinage de la potasse en Saskatchewan correspondent à une valeur allant de 60 à 70 % du minerai. Nous avons déjà mentionné que le chlorure de sodium (ou sel) était l'élément principal et représentait environ 90 % des déchets. Le chlorure de potassium représente 5 %. Les matières insolubles (schlamms) sont constituées de minéraux tels que la dolomite, l'anhydrite, le gypse et les argiles, et ils représentent habituellement de 5 à 10 % des déchets. Un grand nombre de traces d'autres minéraux sont aussi présentes.

À première vue, le retraitement des résidus de potasse dans le but de produire et de commercialiser du sel semble être une solution idéale, car on a estimé que les coûts de production seraient relativement faibles. Toutefois, la plupart du sel de voirie de la région des Prairies est déjà fourni par l'industrie de la potasse et les coûts de transport élevés vers d'autres marchés en feraient une activité peu rentable.

L'International Minerals & Chemical Corporation (Canada) Limited (IMCC) obtient du sel gemme comme sous-produit à son installation de potasse d'Esterhazy (capacité de 120 000 t/a). La Sifto Canada Inc. produit de 20 000 à 30 000 t/a de sel fin par traitement des résidus de sel d'une mine de potasse située à proximité, au lac Patience. La Société canadienne de Sel, Limitée, à Belle-Plaine, produit de 100 000 à 110 000 t/a de sel de table à partir de saumure de sous-produit provenant de la mine de potasse à extraction par dissolution exploitée par la Kalium Canada, Ltd. La division Rocanville de la Potash Corporation of Saskatchewan Inc. (PCS Inc.) produit du sel commercial par tamisage. Au Nouveau-Brunswick, la Potasse d'Amérique extrait directement le

sel et l'obtient aussi sous forme de sous-produit à sa mine de potasse à proximité de Sussex à un rythme allant de 400 000 à 500 000 t/a. Ce sel est vendu principalement à des sociétés de l'est des États-Unis.

L'industrie de la potasse de la Saskatchewan continuera de vendre dans les Prairies une grande partie de ses produits du sel, cependant, ses chances de percer sur d'autres marchés de sel de l'Amérique du Nord ou sur ceux d'autres pays étrangers ne semblent pas être très bonnes en raison des coûts de transport élevés.

La commercialisation d'autres minéraux (particulièrement des métaux) contenus dans les résidus de potasse constitue une possibilité qui n'a pas encore été sérieusement étudiée. L'extraction de ces minéraux n'entraînerait pas une réduction importante des déchets, parce qu'ils ne représentent qu'une très petite portion du total des déchets produits. Toutefois, la production de saumure par le procédé de séparation réduirait les coûts d'élimination des résidus par injection dans des puits, puisque le coût de dissolution serait associé à l'extraction du minerai.

L'utilisation de résidus de sel pour le remblayage souterrain afin d'assurer le soutien des ouvrages et d'améliorer la récupération de la potasse constitue une option intéressante. En fait, on la pratique aux mines de potasse du Nouveau-Brunswick. De plus, l'enrichissement souterrain du minerai par séparation électrostatique réduira les coûts d'extraction et devrait faciliter le stockage souterrain.

En Saskatchewan, des anciennes mines se sont écroulées; il ne reste donc plus de place pour les résidus qui sont actuellement stockés en surface. Les piles de sel pourraient être dissoutes et injectées dans des puits profonds pendant le reste de la durée de vie de la mine. On pourrait réduire quelque peu le coût de l'injection en procédant par gravité et avec de l'eau non potable.

3.2.9 Autres minéraux industriels

On a récupéré de la barytine en retraitant des résidus à la mine Mineral King et à la mine Silver Giant dans le sud-est de la Colombie-Britannique, et à la mine Buchans à Terre-Neuve.

Les dépôts de résidus de certaines mines de gypse en Nouvelle-Écosse contiennent de l'anhydrite qui pourrait être récupérée afin d'être utilisée dans la fabrication du ciment ou comme engrais pour la culture d'arachides.

On trouve du mica dans les dépôts de résidus d'un grand nombre de mines de métaux au Canada. Les résidus de la mine d'or Hemlo et les résidus de la mine Highland Valley Copper ont été étudiés en vue de la production de mica. Jusqu'ici, la faible valeur unitaire du mica a contrecarré les plans de production du mica à partir de résidus miniers.

La récupération du feldspath des résidus de la mine de spodumène de Bernic Lake (Man.) a été proposée, mais elle a été remise à plus tard en 1989 en raison des conditions défavorables du marché.

3.3 Initiatives de recherche et de développement

On retraite les résidus soit pour récupérer des métaux ou des minéraux contenus tels que l'or, l'argent ou le cuivre, ou soit pour d'autres applications telles que le remblayage, la fabrication des blocs et des briques et le remblayage souterrain pour le soutien des plafonds. En outre, le retraitement peut avoir pour but d'éliminer le danger environnemental des résidus.

Le défi du retraitement des résidus abandonnés en vue de récupérer les minéraux ou les métaux qu'ils renferment est semblable à celui de l'extraction et de la récupération des minerais à faible teneur. Les rebuts des mines et des usines de traitement constituent des déchets car on ne peut pas les traiter d'une manière rentable de façon à récupérer les métaux résiduels avec la technologie disponible en ce moment. Par conséquent, pour qu'un retraitement réussisse, il faut soit un accroissement important de la valeur marchande des métaux, soit des progrès dans la technologie d'extraction ou de traitement ou tous ces éléments à la fois.

La recherche et le développement sont impératifs à la réalisation de progrès dans la technologie de traitement et à la découverte d'utilisations nouvelles et améliorées des déchets de traitement des mines et des minéraux. En outre, on pourra ainsi introduire des technologies nouvelles ou modifiées dans les processus de traitement, afin de réduire le volume et la toxicité des déchets qui seront générés dans le futur. Il existe des exemples de réussite à la fois dans le secteur privé et dans le secteur public.

Le projet Snow Lake Gold de la Sikaman Gold Resources Ltd. (voir section 3.1) en constitue un bon exemple. Il propose d'utiliser un procédé Arseno nouvellement développé et breveté pour traiter les résidus arsenicaux des mines d'or (12,9 g/t d'or), qui ont été mis de côté durant l'exploitation minière entre 1949 et 1958. Le nouveau procédé récupère non seulement 90 % de l'or contenu dans les résidus, mais il convertit aussi le minéral d'arsénopyrite en un composé d'arséniate ferrique environnementalement stable. Le procédé a été développé par une société privée avec l'assistance du gouvernement.

Un autre exemple de recherche privée est le système de récupération de l'huile des résidus (*Tails Oil Recovery System*) de la Syncrude Canada Ltd., qui a permis de faire passer la récupération du bitume de 91 % à 95 %. Toutefois, des recherches continuent d'être nécessaires, car il faut trouver des moyens de traiter les boues des bassins à résidus existants et de réduire la toxicité de ces bassins.

Ainsi que nous l'avons déjà mentionné ci-dessus, la récupération du nickel et du vanadium des cendres volantes produites par le traitement des sables bitumineux d'Athabasca a été étudiée par la Direction des mines du ministère de l'Énergie, des Mines et des Ressources (EMR), au cours des années 70. Récemment, la société Carbovan Inc. a commencé à récupérer le vanadium et le carbone des cendres volantes à Suncor.

CANMET, le principal centre de recherche et de développement d'EMR, effectue depuis de nombreuses années beaucoup de recherches sur les déchets miniers. *CANMET* fait participer des clients de l'industrie à ses projets de recherche dès le début du processus et travaille étroitement avec d'autres organismes de recherche et de développement. Une brève description de quelques-unes des initiatives récentes de *CANMET* est donnée ci-dessous.

Étude coopérative pour l'élimination des boues des sables bitumineux

CANMET a été l'un des associés fondateurs dans le projet réunissant le gouvernement et l'industrie et visant à évaluer des moyens d'éliminer les déchets produits par le traitement des sables bitumineux. Les chercheurs étudient, du point de vue environnemental, des solutions efficaces et saines au problème des boues produites par les sables bitumineux. *CANMET*, le Bureau de recherche et de technologie des sables bitumineux de l'Alberta, la Syncrude Canada Ltd., la Suncor Inc., le Conseil national de recherches du Canada, l'*Alberta Research Council* et l'*Alberta Energy* participent à ce projet quinquennal, dont le budget s'élève à cinq millions de dollars.

Etude internationale de remblayage des mines

CANMET, le *Bureau of Mines* des Etats-Unis et le ministère ontarien du Travail ont signé un protocole d'entente visant à évaluer l'emploi de résidus agglomérés comme remblai minier. L'étude conjointe évaluera les propriétés et le comportement des remblais agglomérés et abordera des problèmes particuliers propres à l'utilisation des matériaux agglomérés. *CANMET* et le ministère ontarien du Travail ont financé la moitié du coût de 50 000 $ du projet tandis que le *Bureau of Mines* des Etats-Unis a fourni le reste des fonds.

Béton à haut volume de cendres volantes

CANMET a entrepris des recherches d'avant-garde, qui ont conduit au développement d'un béton à haut volume de cendres volantes. Les études de *CANMET* confirment que l'on peut fabriquer du béton de construction à haut volume de cendres volantes, ayant des propriétés mécaniques équivalentes à celles du béton traditionnel, mais permettant de réaliser des économies considérables. De tels bétons pourraient très bien convenir à la fabrication de fondations, de grands murs de soutien, de pieux et de grandes colonnes. Leur robustesse et leur capacité de contrôle de réactions expansives entre l'alcali et les agrégats devraient les rendre utilisables dans une gamme étendue de conditions. Un des aspects importants de ces études a été la collecte de données relatives à la performance sur l'emploi de ce béton dans le climat canadien. L'utilisation annuelle de cendres volantes dans le béton dans la région d'Halifax, qui en 1983-1984 était pratiquement nulle, est passée à un niveau d'environ 13 000 t ayant une valeur marchande d'environ un million de dollars. A la *Third International Conference on Fly Ash, Silica Fume, Slag and Natural Pozzolans in Concrete* qui s'est déroulée à Trondheim (Norvège) en juin 1989, l'industrie a reconnu que les travaux de *CANMET* constituaient une percée.

3.4 Efficacité du retraitement des résidus comme mesure de nettoyage de l'environnement

Certains projets de retraitement des résidus, par exemple celui de la Magma Copper Company en Arizona, ont constitué des réussites spectaculaires; en effet, ces projets améliorent dans une large mesure les conditions environnementales à proximité immédiate de la mine et permettent à l'exploitant de réaliser un profit important. D'autres installations de retraitement des résidus, par exemple la société Ressources ERG Inc. à Timmins (Ont.), constituent des échecs désastreux, dans lesquels l'exploitant perd de l'argent et laisse l'environnement dans une condition moins acceptable que celle où il se trouvait au début des activités de retraitement.

On a déjà pu constater que les activités de retraitement des résidus ne permettaient pas de récupérer d'habitude une grande proportion du volume des résidus originaux. Même l'exploitation de Craigmont, qui a récupéré 1 Mt de magnétite de résidus de mines de cuivre, a réduit le volume des résidus de moins de 3 %.

Toutefois, l'environnement devrait dans une certaine mesure bénéficier des installations modernes de retraitement des résidus, car celles-ci sont soumises aux règlements modernes régissant l'abandon et la restauration. En effet, les exigences relatives à l'abandon et à la restauration sont bien plus strictes que celles du passé. Cependant, ces avantages environnementaux ne seront réalisés que si le projet constitue une réussite technique et financière.

Deux des installations de retraitement des résidus énumérées aux tableaux 7 ont provoqué une dégradation supplémentaire de l'environnement. La Sumac Resources Ltd. a éprouvé des difficultés : les solutions utilisées pour lixivier l'or et l'argent des anciens résidus de la mine Union

ont cause des fuites. Ces pertes ont provoque une contamination de la nappe phreatique locale par le cyanure. La societe Ressources ERG inc. a commence le retraitement des residus a Timmins sans d'abord deposer aupres de la municipalite un cautionnement de restauration comme elle l'avait promis. Lorsqu'une combinaison de difficultes techniques et financieres a prematurement mis fin a l'exploitation, il en a resulte une deterioration importante de la qualite de l'environnement.

4. LE RÔLE DU GOUVERNEMENT DANS LE RETRAITEMENT DES RESIDUS

Au Canada, l'administration competente de contrôle et de gestion des ressources minerales des provinces releve principalement des gouvernements provinciaux. Toutefois, le gouvernement federal a des responsabilités environnementales qui recouvrent celles des provinces en ce qui concerne le contrôle des décharges minières dans l'environnement. À l'interieur du Yukon et des Territoires du Nord-Ouest, l'administration competente de l'exploitation miniere et de la protection de l'environnement relève du gouvernement fédéral; il est toutefois possible que le gouvernement fédéral délègue cette responsabilité à une date ulterieure a chacun des gouvernements territoriaux.

Le chapitre trois a présenté des exemples de projets réussis de retraitement des residus ainsi que d'autres possibilités d'activités de retraitement. Les exemples prouvent que l'industrie minière canadienne est désireuse, capable et impatiente de se lancer dans des projets de retraitement des résidus offrant une probabilité raisonnable de succès à l'échelle commerciale.

4.1 Mesures fiscales

Aux fins de la *Loi de l'impôt sur le revenu*, un dépôt de résidus miniers n'est pas considere comme etant un gisement minéral naturel d'après la définition de «ressource minerale» figurant a l'article 248 de cette loi. Il est plutôt considéré comme un stock de «minerai d'une ressource minerale». la «ressource minérale» étant le gisement minéral original d'où proviennent les résidus. Par consequent, les projets de retraitement des résidus ne sont pas admissibles aux mesures fiscales spéciales visant les exploitations minières, en particulier celles concernant les frais d'exploration, le financement par actions accréditives et les déductions pour amortissements accelerés de la catégorie 41.

Toutefois, en application de l'article 1204 du Règlement de l'impôt sur le revenu, les revenus découlant du «traitement au Canada de ... minerai ... tiré de ressources minerales au Canada» sont inclus dans la définition de «bénéfices relatifs à des ressources». Il en resulte que la déduction relative aux ressources s'applique à tous les projets de retraitement de residus miniers. Ceci est pertinent, puisque ces projets seraient normalement assujettis à des impôts provinciaux d'exploitation minière, qui ne sont pas déductibles. Jusqu'au 1er janvier 1990, une déduction pour épuisement pouvait également être réclamée par les exploitations de retraitement des résidus pour les machines et le matériel mentionnés au point *k)* de la catégorie 10 de l'annexe II du Règlement de l'impôt sur le revenu.

4.2 Autres mesures budgétaires

Dans certains pays du monde, le retraitement des résidus miniers peut être financé en partie par des subventions ou des subsides du gouvernement. Par exemple, au Royaume-Uni des subventions *(Derelict Land Grants)* sont disponibles afin d'aider les propriétaires de terres qui ont été abandonnées en raison d'un usage industriel passé. Plusieurs terrils de mines de charbon et dépôts de résidus ont été retraités grâce à des subventions pour terres abandonnées. Ces

subventions furent accordées dans le cadre de projets qui ont transformé des mines abandonnées en des développements industriels, commerciaux, résidentiels ou agricoles.

4.3 Réglementation

Il existe des mesures législatives visant à faire respecter les règlements régissant la décharge des effluents des dépôts de résidus des mines en exploitation. Dans certaines provinces, les règlements sont stricts et prévoient de lourdes pénalités en cas de violation des normes de qualité de l'air et de l'eau. Certaines administrations compétentes exigent que toute nouvelle proposition d'exploitation minière ainsi que toutes les installations minières en production soumettent un plan acceptable de fin d'exploitation, de restauration, de revalorisation et d'abandon de la propriété minérale pour recevoir les licences et les permis qui autorisent le commencement de l'exploitation minière. Une action coordonnée serait souhaitable afin d'harmoniser les exigences fédérales et provinciales.

Pour garantir la conformité et la mise en oeuvre du plan d'abandon de la mine, il peut être possible d'exiger de la société exploitante un dépôt d'une caution de bonne exécution qu'elle perdra si elle ne termine pas les travaux décrits dans le plan d'abandon.

La proposition mentionnée précédemment de la Curragh Resources Inc. de retraiter 40 Mt de résidus à la mine Faro de plomb-zinc (voir tableau 7d) a, dans une grande mesure, résulté des exigences juridiques d'un plan d'abandon acceptable sur le plan environnemental, qui était conditionnel à l'obtention du permis d'utilisation d'eau. Bien qu'on ne s'attende pas à ce que le retraitement des résidus soit rentable, on n'en prévoit pas moins qu'il devrait être considérablement moins coûteux que la restauration sur place.

La mise au point de règlements régissant la restauration, l'abandon et les cautions de bonne exécution devrait permettre d'obtenir de meilleurs résultats pour le stockage et le traitement des résidus et d'autres déchets dans les installations en exploitation; elle devrait permettre également d'améliorer les méthodes de traitement des déchets dans les nouvelles installations.

Dans le cas de dépôts de résidus abandonnés, où la société responsable et ses dirigeants ne sont plus là et où le titre est retourné à la Couronne, la responsabilité ou les obligations au sujet des incidences environnementales des résidus abandonnés peuvent reposer sur la Couronne. Un exemple de la façon dont les gouvernements ont réagi en présence de ce genre de situation est illustré par les mesures prises à la mine d'or Deloro, au nord de Belleville (Ont.), où environ 10 000 t d'arséniate de calcium sont stockées dans des piles le long de la rivière Moira. Ces piles de déchets d'arséniate proviennent d'usines de fusion qui ont fermé en 1961. Selon un accord fédéral-provincial visant à nettoyer les dépôts toxiques en Ontario, les paliers supérieurs des gouvernements dépenseront entre cinq et dix millions de dollars pour restaurer le site.

4.4 Prélèvements sur les producteurs actuels

Aux termes de la Surface Mining Control and Reclamation Act de 1977, le gouvernement des États-Unis impose à toutes les mines de charbon actuellement en exploitation un prélèvement de 35 cents par tonne courte de charbon extrait à ciel ouvert, de 15 cents par tonne courte de charbon extrait de mines souterraines et de 10 cents par tonne de charbon de lignite. Les montants prélevés, qui constituent ce qu'on appelle couramment le *Superfund*, servent à financer la restauration et la revalorisation des sites des mines de charbon abandonnés.

Ceux qui s'opposent au *Superfund* estiment que l'imposition d'un prélèvement semblable sur la production des mines canadiennes serait injuste, car elle forcerait les exploitants actuels à payer

pour corriger des problèmes crees par la generation precedente d'exploitants miniers. En outre l'imposition d'un prelevement risquerait de mettre en danger la position concurrentielle des producteurs canadiens.

4.5 Assistance a la recherche et au développement

La section 3.3 ci-dessus a mis en lumiere l'importance de la recherche et du developpement de technologies de traitement des minéraux nouvelles ou ameliorees, appliquees au retraitement des residus. En effet, si l'on ne dispose pas de technologies de traitement des mineraux offrant des ameliorations importantes dans la recuperation par rapport à la technologie utilisee ors de a production originale des résidus, les possibilités d'activités economiquement viables de retraitement des residus sont pratiquement nulles ou non existantes. Les gouvernements et e secteur privé sont bien conscients de cette réalité et ils appuient activement les recherches sur e traitement des minéraux sous la forme de projets cooperatifs et individuels. Les exemples presentes a la section 3.3 suggerent que l'investissement dans la recherche sur le traitement des mineraux pourrait être l'initiative la plus viable dont les gouvernements disposent.

4.6 Transfert de technologie

Le terme «transfert de technologie» désigne l'étude des nouvelles technologies à travers le monde, puis la diffusion de l'information à leur sujet à toutes les parties concernees au Canada. L'information sur les nouvelles technologies de retraitement des résidus peut ainsi être rapidement mise à la disposition de tous les utilisateurs possibles.

Par le biais de *CANMET*, le gouvernement fédéral gère déjà un programme de transfert de technologie s'appliquant à la technologie des mines et du traitement des mineraux.

5. CONCLUSION

Les récentes activités de retraitement des résidus au Canada et à l'étranger ont donné lieu a une gamme tres etendue de résultats, allant de succès retentissants qui produisent des profits et des avantages importants au niveau environnemental jusqu'à des échecs épouvantables qui provoquent des faillites et une dégradation supplémentaire de l'environnement.

La quantité des résidus qui reste à stocker après une activité de retraitement est d'habitude pratiquement la même que la quantité des résidus originaux.

Le retraitement des résidus miniers d'un dépôt abandonné n'est bénéfique à l'environnement que s'il vise à extraire un élément dangereux ou que si les conditions de stockage dans les bassins sont meilleures sur le plan de l'environnement.

Les activités de retraitement des résidus exigent parfois l'addition de produits chimiques toxiques, qui n'étaient pas presents dans les résidus originaux.

Dans le cas de la plupart des dépôts de résidus présentant des risques importants pour l'environnement, il peut être plus économiquement viable de prendre des mesures correctives pour ameliorer l'intégrité des bassins actuels et des structures de confinement et aussi de contrôler d'autres incidences environnementales plutôt que de retraiter les residus.

Le retraitement réussi des résidus exige une technologie de traitement des minéraux beaucoup plus efficace et efficiente que la technologie qui avait été employee lorsque les résidus originaux ont été déposés. Dans bien des cas, cela signifie que l'appui du secteur prive et du

gouvernement a la recherche et au developpement du traitement des minéraux constituera a meilleure motivation pour le retraitement des residus abandonnes

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48TH ANNUAL MINES MINISTERS' CONFERENCE

Report on Mineral Exploration Expenditures and Flow-through Share Funding

Federal

HALIFAX, Nova Scotia
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REPORT ON MINERAL EXPLORATION EXPENDITURES AND FLOW-THROUGH SHARE FUNDING

BY THE

INTERGOVERNMENTAL WORKING GROUP
ON THE MINERAL INDUSTRY

PREPARED FOR
THE MINES MINISTERS' CONFERENCE
HALIFAX, NOVA SCOTIA

September 1991

Energy, Mines and Resources Canada
Énergie, Mines et Ressources Canada

FOREWORD

The intent of this report is to present the facts as to the current level of mineral exploration expenditures and flow-through share financing in Canada. The data and views expressed have been assembled and agreed upon through a joint federal/provincial project of the Intergovernmental Working Group on the Mineral Industry (IGWG).

The Mineral Policy Sector of the Department of Energy, Mines and Resources (EMR), which prepared reports compiled for the Mines Ministers' Conference in 1988, 1989 and 1990, has co-ordinated the preparation of this report.

Throughout this report mineral exploration refers to exploration for metals, nonmetallic minerals and coal, but not to oil sands, tar sands and oil and gas.

EXECUTIVE SUMMARY

Total mineral exploration activity in 1990 was about $750 million according to the "preliminary" estimate data of the federal-provincial surveys. This was down slightly from the $828 million achieved in 1989 and considerably lower than the approximate $1.3 billion expended in 1987 and $1.35 billion expended in 1988.

Overall, in 1991, exploration in the provinces and territories is expected to be down from the level in 1990 as a result of a reduced level of flow-through share financing. While still preliminary, EMR's current view of total exploration activity for 1991 is that amounts spent will likely be in the area of $530-$580 million.

The amount of money raised by flow-through shares in 1990 is now estimated by EMR to have been about $250 million, down approximately $100 million from the $350 million level experienced in 1989. EMR estimates that flow-through share funding for 1991 will fall to somewhere around $40 million.

TABLE OF CONTENTS

		Page
SECTION A. CURRENT OUTLOOK FOR CANADIAN MINERAL EXPLORATION AND FLOW-THROUGH SHARE FINANCING		1
1.	Outlook for Flow-Through Share Funding in 1991	1
1.1	Introduction	1
1.2	Recent Background	1
1.3	Stock Exchange Data	3
1.4	Outlook	3
2.	Outlook for Exploration in 1991	3
2.1	Introduction	3
2.2	EMR and Statistics Canada Surveys of Exploration Spending Intentions - 1991	4
2.3	Senior Firm Exploration Spending for 1990 and 1991	5
2.4	Outlook for Exploration Based on Metal Prices	7
2.5	Recent Diamond Drilling Activity	7
3.	Overall View on Mining Exploration for 1991	15
SECTION B. CURRENT REGIONAL OUTLOOK .		17
4.1	Introduction	17
4.2	Newfoundland and Labrador	17
4.3	Nova Scotia	18
4.4	New Brunswick	19
4.5	Quebec	21
4.6	Ontario	22
4.7	Manitoba	23
4.8	Saskatchewan	24
4.9	Alberta	25
4.10	British Columbia	25
4.11	Northwest Territories	27
4.12	Yukon	28
SECTION C. HISTORICAL PERSPECTIVE ON MINERAL EXPLORATION ACTIVITY IN RECENT YEARS		29
5.1	Introduction	29
5.2	Exploration Expenditures by Region	29
5.3	Exploration Expenditures by Type of Company	29
5.4	Exploration Expenditures by Type of Commodity Sought	35

Table of contents (cont'd)

	Page
SECTION D. HISTORICAL PERSPECTIVE ON FLOW-THROUGH SHARE FINANCING ACTIVITY 1983-91	39

LIST OF FIGURES

Figure 1	Monthly Average Gold Price, January 1986 to July 1991	2
Figure 2	Total Exploration Expenditures and Canadian Metal Prices Lagged One Year	8
Figure 3	Senior Exploration Expenditures and Canadian Metal Prices Lagged One Year	9
Figure 4	Surface and Underground Drilling, by Month - January 1985 to May 1991	11
Figure 5	Surface and Underground Drilling, by Quarter - 1985 to 1991	12
Figure 6	Surface and Underground Drilling, by Year - 1973 to 1990	13
Figure 7	Surface and Underground Drilling: Contract Diamond Drilling Operations, by Year - 1973 to 1989	14
Figure 8a	Canadian Exploration Expenditures (Field Work Only) by Type of Company 1985 to 1989	33
Figure 8b	Canadian Exploration Expenditures (Field Work plus Overhead) by Type of Company 1989 with 1990 Preliminary Estimate and 1991 Forecast	34
Figure 9	Total Exploration Expenditures 1983 to 1989 with 1990 Preliminary Estimate and 1991 Forecast	36
Figure 10	Total Exploration Expenditures 1969 to 1989: Junior/Senior Split with Preliminary Estimate for 1990 and 1991 Forecast	37
Figure 11	Canadian Exploration Expenditures, Distribution by Commodity Sought 1986 to 1989	38
Figure 12	Flow-Through Share Financing Levels 1983 to 1991	40

Page

LIST OF TABLES

Table 1	Flow-Through Share Funds Raised by Diversified Limited Partnerships in 1987-90	1
Table 2	Comparison of Intentions, Preliminary and Actual Exploration Expenditures, 1984-91	6
Table 3a	Mineral Exploration Expenditures in Canada, by Province, 1985-91 (Current $ millions)	30
Table 3b	Mineral Exploration Expenditures in Canada, by Province, 1985-91 (1990 $ millions)	31
Table 4	Mineral Exploration Expenditures in Canada, by Province, 1985-91 (Percentage distribution)	32
Table 5	Ratio of Flow-Through Financing to Total Exploration Expenditures, 1983-91	39

SECTION A. CURRENT OUTLOOK FOR CANADIAN MINERAL EXPLORATION AND FLOW-THROUGH SHARE FINANCING

This paper reports on the current outlook and recent historical trends in both flow-through share financing activity and mineral exploration.

1. Outlook for Flow-Through Share Funding in 1991

1.1 Introduction

This section focuses on the quantity of funds raised for exploration by means of flow-through share financing. In recent years, the majority of junior exploration has been financed by flow-through shares while, for the most part, seniors now finance their exploration by means other than flow-through shares.

Flow-through share financing is an important element in determining the junior component of the total exploration picture. Since most junior companies are public and need approval from the stock exchanges for their placements, the information on their financing activities was obtained mainly from publications reporting on stock exchange activities or from information gathered directly from the exchanges.

1.2 Recent Background

The great increase in flow-through share financing over the 1985-88 period probably would not have been possible without the emergence of the large limited partnerships. These partnerships proved successful because of their ability to mass market flow-through shares and diversify risk. Table 1 illustrates the impressive contribution made by diversified limited partnerships to the total dollar volume of flow-through funds raised in the years 1987 to 1990.

However, in 1991, diversified limited partnerships withdrew from the flow-through share market. At the time of writing, no large limited partnerships have come to the flow-through share market in 1991.

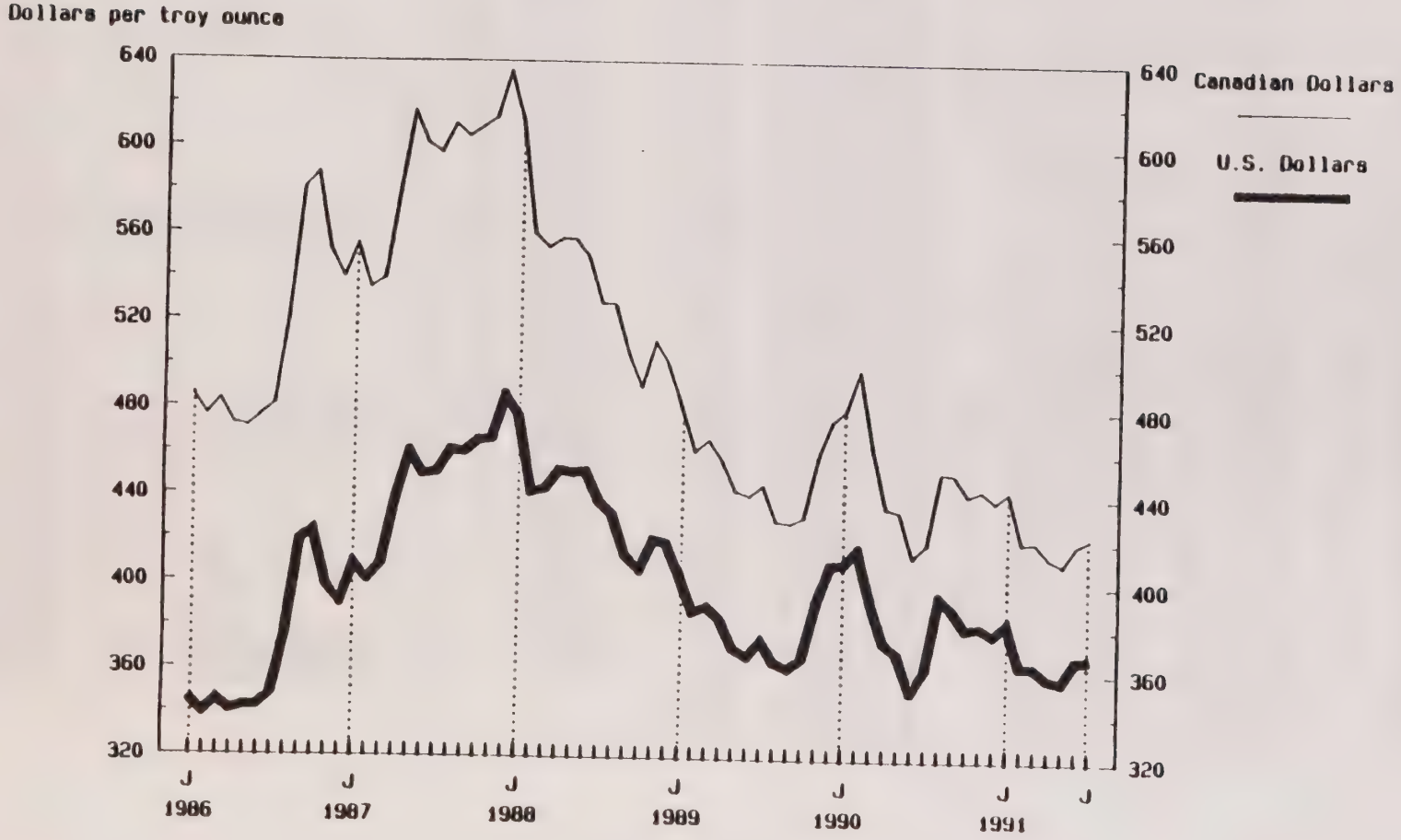
TABLE 1. FLOW-THROUGH SHARE FUNDS RAISED BY DIVERSIFIED LIMITED PARTNERSHIPS IN 1987-90

	Value of Issues Sold			
	1987	1988	1989[a]	1990[a]
	($ million)			
TAP	28	23	0	0
CMP	239	234	113	89.4
NEF	-	8	0	0
MVP	57	26	0	0
NIM	260	270	49	0
FIRST EX	47	21	0	0
MIDDLEFIELD	29	5.5	5.5	10.9
MINTAX	15	3.5	0	0
Total	675	591	167.5	100.3

[a] The figures for 1989 and 1990 generally represent financing for mining only. Some limited amounts of funds raised for exploration for oil and gas are, however, included in the 1987 and 1988 totals. The numbers for 1989 and 1990 include the so-called "gross-up" whereby companies retained CEIP monetary incentives and spent them as well.
- Nil.

Figure 1

MONTHLY AVERAGE GOLD PRICE
JANUARY 1986 TO JULY 1991



Sources: Metals Week and Handy & Harman.

1.3 Stock Exchange Data

The first half of 1991 has given signs of renewed investor confidence in the stock markets and there has been a reasonable amount of money for new stock issues of good quality. This undoubtedly augurs well for senior companies, but the good fortune has not extended to the junior sector.

Stock market conditions for junior equities remain weak. The Vancouver Stock Exchange (VSE) index–if taken as a proxy for the measure of investor interest in junior stocks–peaked at 2015 points in May 1987, the same year in which the volume of flow-through share financing peaked. The index has declined by 33 percent since the middle of 1990 and in January 1991 fell below the 500-point level for the first time in the index's 8-year history. This continues the downward trend that started following the 1987 stock market crash. On July 1, 1991, the index stood at 580 evidencing only a marginal recovery from its lowest point.

Statistics provided by the VSE indicate that some $7.3 million of flow-through share financing was raised on the VSE through 29 private placements during the first six months of 1991. The $7.3 million includes $0.8 million that will be used for oil and gas exploration, which leaves $6.5 million available for mining exploration. This represents a $250 000/week average for mining. If this financing trend continues, $13 million will be raised for mining on the VSE in 1991.

Data from the Montreal Exchange (ME) and the Toronto Stock Exchange (TSE) indicate that, excluding amounts raised by interlisted companies, some $4 million of flow-through share financing has been raised on these two exchanges. Mineral exploration will use $3.5 million of this amount. If this financing trend continues, $7 million will be raised for mining on the ME and TSE in 1991.

1.4 Outlook

The various amounts of flow-through share funds raised for mining on the three stock exchanges add up to $10 million at July 1, 1991. Assuming that an equal amount of funds will be raised in the second half of 1991 would lead to a conclusion that a total of $20 million of flow-through share financing would be available for the whole year.

However, traditional late fall and year-end tax shelter "take-up" activity could increase the total amount of funds available for juniors. In fact, recent announcements indicate that flow-through share financing for July was over $3 million. Although it is difficult to forecast the amount of flow-through share financing for the entire year at this time, EMR believes that $40 million represents a reasonable estimate for flow-through share financing for 1991 because recent years' experience has demonstrated that the second half of the year's financing is much stronger than the first half of the year.

2. Outlook for Exploration in 1991

2.1 Introduction

This section looks at the expected level of total mineral exploration, as compared to its financing. Since we are looking ahead, the usual statistical reporting sources are supplemented by other sources. The section firstly reports the results of the federal-provincial "Intentions Survey" for 1991 co-ordinated by Statistics Canada and EMR. While this is the latest "complete" survey available, it suffers from a serious shortcoming in that the "intentions" in question were gathered

in the December 1990-March 1991 period, and the results of this once-a-year survey may no longer be current given that many months have elapsed.

Another source of information comes from a modelling technique designed by the Mineral Policy Sector to forecast the amount of total exploration and the amount of senior company exploration. This modelling technique is based on a "statistically significant" relationship between exploration activity and metal prices.

Thirdly, this section reviews recent levels of diamond drilling to give a sense of the actual trend in exploration activity.

2.2 EMR and Statistics Canada Surveys of Exploration Spending Intentions - 1991

Methodology

On October 31, 1990, Statistics Canada sent 350 questionnaires to mineral producing firms. EMR has assumed responsibility for the collection of data from the non-producing firms and has sent out close to 3300 questionnaires (jointly with provincial governments that participate in this exploration survey). It should be noted that one company can receive several questionnaires depending on the number of provinces in which the company is working. The number of companies actually engaged as operators of exploration projects in Canada is more like 900. Other joint-venture partners provide exploration funding but, because they are not project operators, they do not report intended expenditures on exploration. In this survey, companies were asked to report intended exploration expenditures for their fiscal year that ended between April 1, 1991 and March 31, 1992.

The exploration expenditure statistics were collected for both "general" and "minesite" exploration. Forecast exploration figures include expenditures in the following categories: field expenditures on physical work and surveys; related land costs; overhead expenditures in the field; and, exploration-related head office expenses.

Results

Statistics Canada published the results of its survey under the heading "on-property exploration" (minesite exploration) in its annual publication "Exploration, Development and Capital Expenditures for Mining and Petroleum and Natural Gas Wells" - Intentions 1991 (Statistics Canada catalogue 61-216). The Statistics Canada intentions total for minesite exploration for 1991 is $88 million. This figure has since been revised upward to $98 million, based on updated information received by EMR.

EMR will release the results of its survey in the September 1991 issue of its Canadian Mineral Industry Monthly Report. The first indication suggests that "general exploration" (off-property exploration) would be $548 million.

Accordingly, on the basis of company intentions in the December 1990-March 1991 period, total exploration (both on- and off-property) for 1991 would be expected to total about $646 million ($548 million plus $98 million).

Interpretation

The Statistics Canada and EMR surveys of intentions provided an indication of the late-1990 industry view of total exploration spending expectations for 1991. However, because intentions expressed in late 1990 may subsequently have been modified by events that can limit the availability of funds, such as stock market conditions, changing metal prices and other general economic factors such as the current recession or company-specific factors, it may be that the results of this survey can no longer be interpreted as being realistic forecasts of the exploration that will be ultimately performed in 1991.

Table 2 shows intentions, as well as preliminary and actual expenditures, for minesite and general exploration for the years 1984 to 1991. The table demonstrates that for the period 1985-88 total expenditures reported initially on a preliminary basis, and then later on an actual basis, generally exceeded intentions for the same period. In 1989, this pattern was reversed. The explanation for the period of 1985-88 could be that exploration funding was becoming more abundant than companies had originally anticipated but, starting in 1989, there was a decline in the availability of flow-through share funds that companies had not expected. If so, then, 1991 actual exploration could be lower than the 1991 intentions data indicate.

2.3 Senior Firm Exploration Spending for 1990 and 1991

Methodology

Information on exploration spending by type of company (1989 actual, 1990 preliminary and 1991 intentions) is now available from the federal-provincial survey of preliminary and forecast exploration expenditures. About 224 active senior companies in 1990 and 195 in 1991 reported exploration spending. Included in the numbers for senior companies are producers and their affiliates as well as foreign and petroleum companies. For joint ventures, total project expenditures are reported by the project operator. Accordingly, senior participation has at times been subject to overestimation. Despite this fact, data analysis has been consistent over the years and a clear trend can be noted.

Results

According to the federal-provincial survey, the decrease in the level of expenditures made by seniors was significant from 1988 to 1989, down 22% from $708 million to $555 million. The decrease is likely to continue, but to a smaller extent. The preliminary estimate for 1990 ($502 million) is down 10 percent from 1989 and the "intentions" for 1991 ($462 million) is 8 percent lower than 1990 expenditures. Expenditures made by seniors contributed to 52 percent of the total exploration expenditures in 1988, 67 percent in 1989 and 1990 and an expected 72 percent in 1991.

With overall intentions for 1991 of $646 million and senior intentions of $462 million, the value of junior intentions for 1991 was $184 million. However, junior exploration spending levels are determined more by availability of financing than by company intentions.

TABLE 2. COMPARISON OF INTENTIONS, PRELIMINARY AND ACTUAL EXPLORATION EXPENDITURES, 1984-91

	Intentions	Preliminary	Actual
		($ millions)	
1984			
Minesite Exploration		158.6	136.4
General Exploration		389.7	480.9
Total Exploration	na	548.3	617.3
1985			
Minesite Exploration	150.9	89.4	100.1
General Exploration	361.2	471.5	488.8
Total Exploration	512.1	560.9	588.9
1986			
Minesite Exploration	87.5	110.2	108.6
General Exploration	431.2	483.6	589.3
Total Exploration	518.7	593.8	697.9
1987			
Minesite Exploration	122.6	121.5	161.0
General Exploration	583.2	849.6	1 139.0
Total Exploration	705.8	971.1	1 300.0
1988			
Minesite Exploration	154.7	138.7	143.0
General Exploration	891.0	1 107.9	1 207.0
Total Exploration	1 045.7	1 246.6	1 350.0
1989			
Minesite Exploration	111.7	160.0	115.3
General Exploration	832.2	766.7	712.5
Total Exploration	943.9	926.7	827.8
1990			
Minesite Exploration	150.0	107.7	
General Exploration	633.0	643.5	
Total Exploration	783.0	751.2	na
1991			
Minesite Exploration	97.9		
General Exploration	548.3		
Total Exploration	646.2	na	na

Source: Statistics Canada and federal-provincial survey of mining and exploration companies. The 1990 Actual surveys is currently in progress, and the 1991 Preliminary and Actual surveys will not be sent out until late 1991 and early 1992, respectively.

na Not available.

2.4 Outlook for Exploration Based on Metal Prices

Methodology

An analysis of historical data indicates that the level of expenditures on mineral exploration in a given year can be linked to the previous year's metal prices. This may be because companies that spend money on exploration view it like any other investment, with expected returns being dependent on expected revenues from the subsequent mining of discovered deposits. It also appears that current commodity prices figure prominently in the minds of investors in exploration when predicting the course of future prices. As well, prices help to determine cash flows and therefore help determine the amount of the funds available for spending on mineral exploration.

Changes in exploration spending are likely to lag price changes because exploration activity in any particular year is the result of a budgeting process that takes place in the preceding year. Budget allocations are therefore likely to reflect metal prices in existence during the immediately preceding year.

Figure 2 shows the relationship, between historic exploration expenditures and the EMR yearly metals price index, lagged one year. The index is a composite of prices of six metals comprising gold, silver, copper, zinc, lead and nickel.

Due, no doubt, to the large increase in the use of flow-through shares by junior companies over the 1986-88 period, the correlation between total exploration spending and metal prices became less pronounced during that interval.

Results

Based on the relationship between total exploration and metal prices observed over the period 1971-90, total exploration expenditures in 1991 could reach an upper value of about $717 million (Figure 2). Similarly, it is estimated that senior exploration expenditures could amount to as much as $532 million in 1991 (Figure 3).

Although the model uses average yearly metal prices to predict exploration expenditures, it is likely that a significant price trend during the second half of a year would have an effect not quite captured by the yearly average. If indeed exploration budgets are developed during the latter part of the year, the falling prices experienced during the last quarter of 1990 (and continuing into 1991) may have had an influence on exploration intentions for 1991 that would not have been picked up by the model. In view of this, the model was run using average metals prices for 1990 based on prices at the end of the year. This resulted in an estimate for 1991 of about $485 for senior exploration and about $645 million for total exploration.

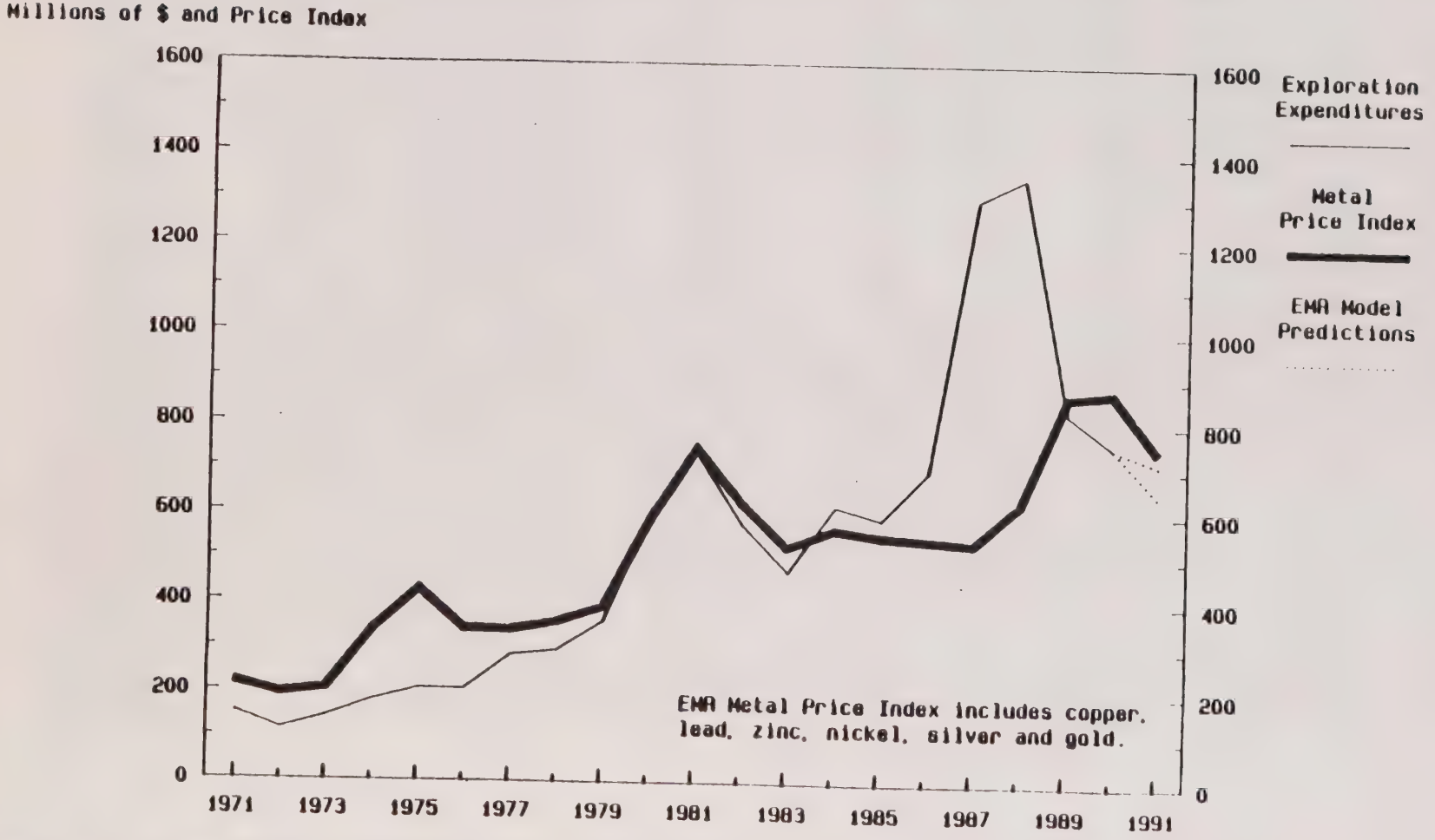
While the difference between these two figures would imply a forecast of $160 million for junior spending, no attempt was made to predict junior exploration spending by this method, since in that sector, exploration is largely determined by the availability of financing from equity markets.

2.5 Recent Diamond Drilling Activity

Diamond drilling statistics provide another indicator of recent levels of Canadian mineral exploration activity. The Canadian Diamond Drilling Association (CDDA) gathers diamond drilling statistics from its member companies monthly. Available CDDA statistics cover about 50-60 percent of total Canadian contract diamond drilling activity, and are normally available one to three months after month end.

Figure 2

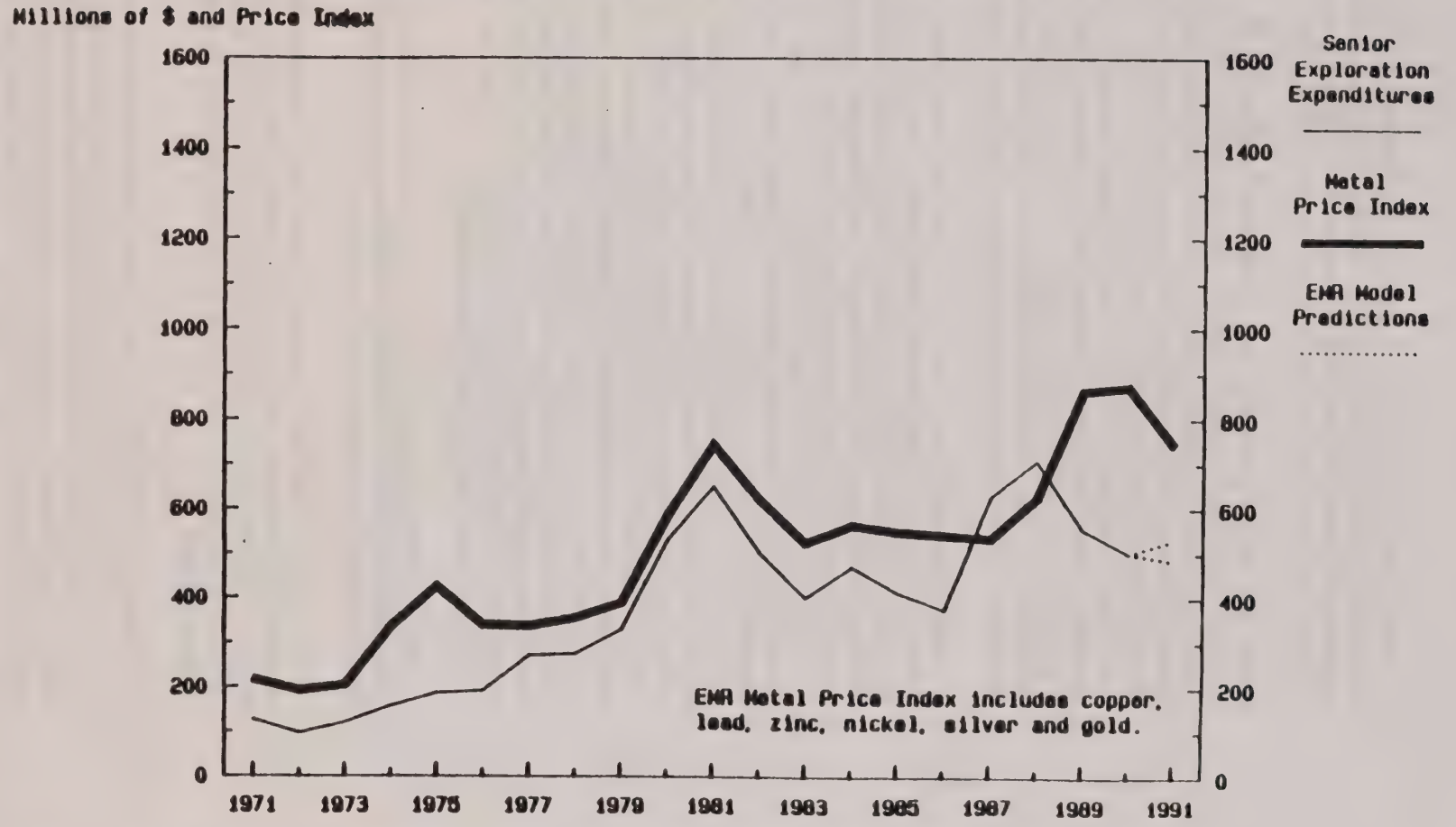
TOTAL EXPLORATION EXPENDITURES AND CANADIAN METAL PRICES LAGGED ONE YEAR



Sources: Statistics Canada Catalogues 61-007 and 61-216 for exploration data 1971-85; for 1986-88, the federal-provincial field expenditures were multiplied by the ratio total/field from Statistics Canada; 1989 final and 1990 preliminary estimate based on federal-provincial surveys co-ordinated by Statistics Canada and EMR 1991 forecasts predicted by EMR model.
Expenditures are in current dollars and include overhead

Figure 3

SENIOR EXPLORATION EXPENDITURES AND CANADIAN METAL PRICES LAGGED ONE YEAR



Sources: For 1971-88 senior expenditures were estimated by EMR; 1989 final and 1990 preliminary estimate based on federal-provincial surveys co-ordinated by Statistics Canada and EMR; 1991 predicted by EMR model.
Expenditures are in current dollars and include overhead.

In contrast, because of the delay in getting responses from many companies, annual exploration expenditure statistics gathered by the federal-provincial exploration survey are not normally available until about one year after the end of any exploration year. Therefore, they report on exploration spending and activities that took place during the previous 12 to 24 months.

There has been a reasonably close correlation between annual CDDA drilling footages and Canadian exploration expenditures over the past 10 or 15 years, so that the CDDA drilling statistics depicted in Figure 4 (monthly, 1985-91), Figure 5 (quarterly, 1985-91) and Figure 6 (annual, 1973-90) should provide a reasonable and up-to-date indication of recent national mineral exploration activity trends. In addition, a comprehensive 17-year graph (Figure 7) depicts total Canadian contract drilling up to 1989 as reported annually by drilling contractors to EMR and published in Statistics Canada Catalogue 26-201. Although these two sources provide different total results on an annual basis, the same overall trends are observable in both, even though the CDDA statistics are incomplete because not all Canadian diamond drilling contractors are members of CDDA and not all member companies report their drilling to CDDA.

As can be seen from Figure 5, each of the past three years (1988, 1989 and 1990) has shown a similar pattern of diminishing diamond drilling through the year, with the first quarter of 1989, 1990 and 1991 exhibiting an increase in drilling over the final quarter of the previous year. Drilling has consistently peaked during the first quarter both because flow-through funds from the previous year were carried over into January and February of the following year, and because much drilling must be done during the winter months from the ice on lakes and muskeg areas, which are generally inaccessible to drilling equipment at other times of the year. The general pattern of decreasing drilling through the year in 1988, 1989, 1990 and 1991 contrasts with the pattern of 1986 and 1987, when diamond drilling levels in the second half of the year were higher than in the first half, because of increasing availability of flow-through funding. The decline that started in the first half of 1988 supports the general view that exploration activity began to slow down in 1988 from the peak level reached at the end of 1987 and early in 1988. The slowdown in drilling activity over the last two quarters of 1988 reflects the impact of the reduced availability of financing for the junior firms, whose exploration expenditures depended more on financing by sales of flow-through shares than on favourable metal prices. During the latter half of 1988, the flow-through share market tapered off as the gold price declined and as junior equity markets continued to deteriorate. Despite this slowdown in drilling, total Canadian exploration spending in 1988 was $1.35 billion, a very high level by historical standards.

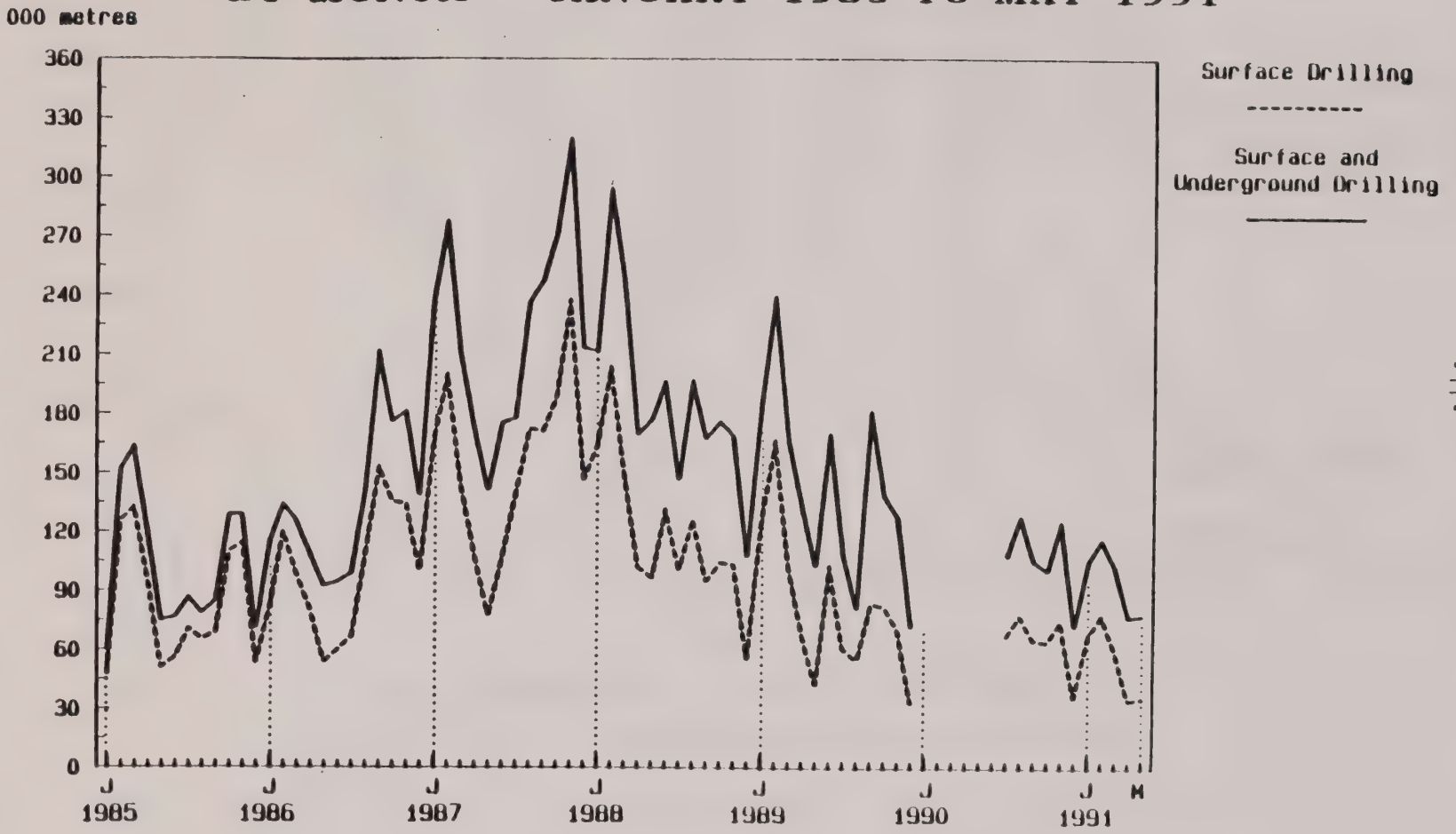
Exploration drilling continued to decline in the second quarter of 1991, largely because junior companies have found it increasingly difficult to raise exploration funds through the sale of shares, whether flow-through or non-flow-through.

The 18-year and 17-year drilling graphs (Figures 6 and 7), together with Canadian exploration data for earlier years, show the all-time highs for diamond drilling that occurred in 1987 and 1988. The levels in 1989 and 1990 were still strong compared to 1981, the drilling peak immediately prior to the takeoff in flow-through share sales, but the number of metres drilled appears to have dropped off significantly in 1991.

Surface diamond drilling activity has fluctuated more than underground drilling (Figures 4, 5 and 7). The likely explanation for this appears to be that a significant amount of the underground drilling consists of contract drilling aimed at establishing replacement ore reserves at producing mines. In the gathering of exploration expenditures statistics, expenditures on this sort of drilling are counted as "development expenditures" rather than "exploration expenditures," so that much of the underground diamond drilling is not "exploration drilling" in the sense of being aimed at the

Figure 4

SURFACE AND UNDERGROUND DRILLING BY MONTH – JANUARY 1985 TO MAY 1991

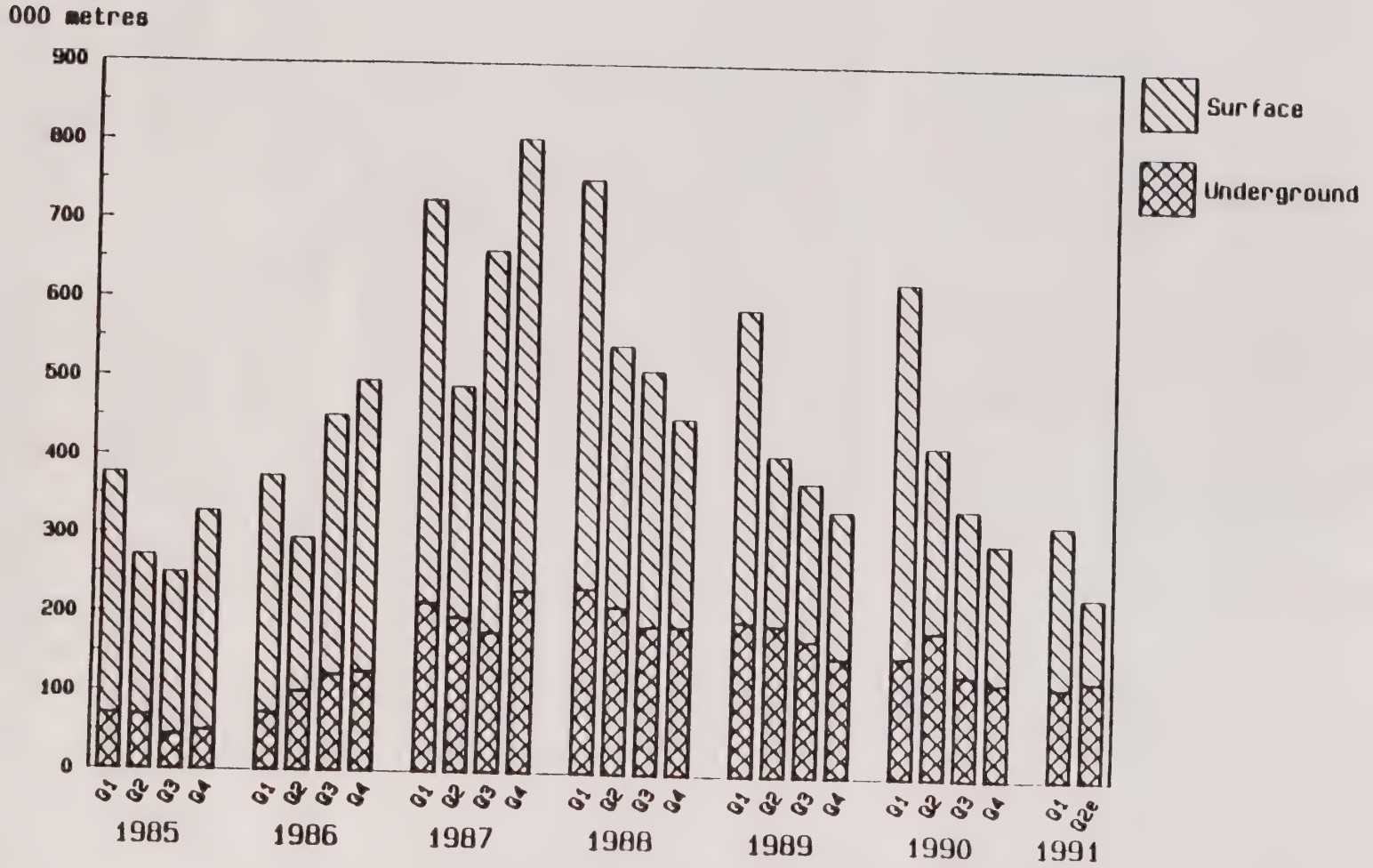


Source: Canadian Diamond Drilling Association.

Note: These data include approximately 50-60 percent of total drilling activity. Monthly data are not available for the period January June 1990 because final CDDA statistics for this period were released only as a six-month total.

Figure 5

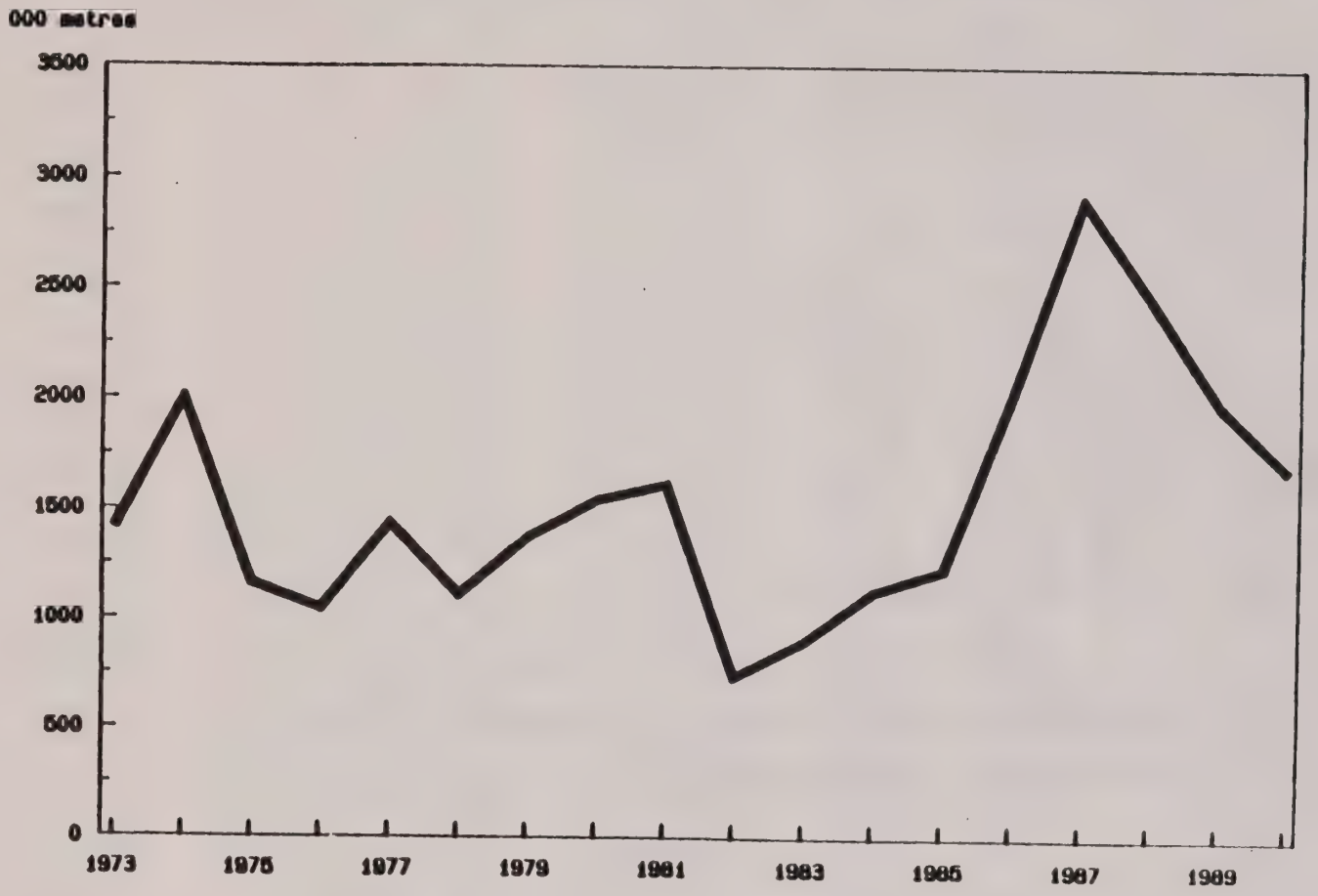
SURFACE AND UNDERGROUND DRILLING BY QUARTER – 1985 TO 1991



Source: Canadian Diamond Drilling Association.
Note: These data (as reported to CDDA) include approximately 50-60 percent of total drilling activity estimate.

Figure 6

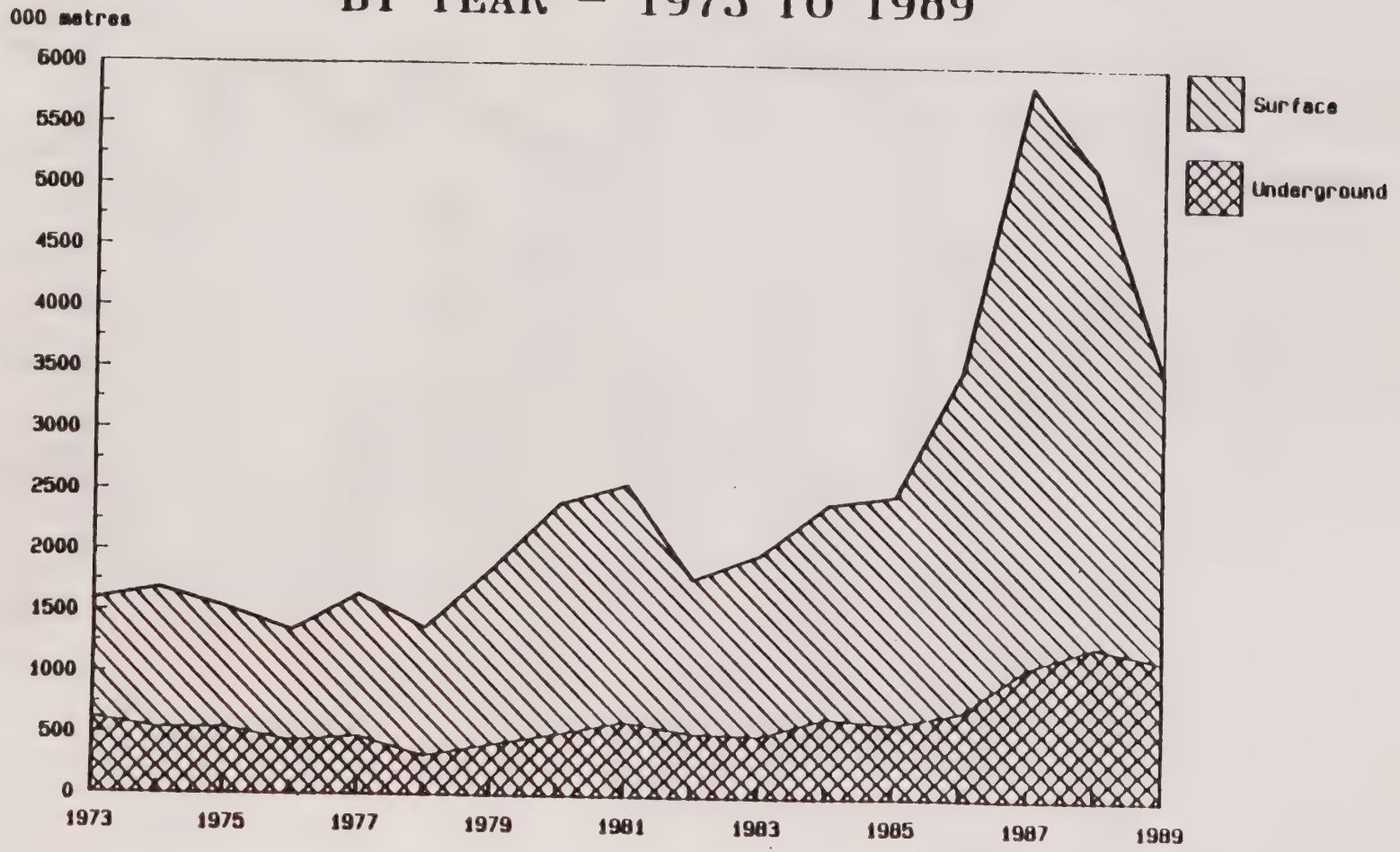
SURFACE AND UNDERGROUND DRILLING BY YEAR - 1973 TO 1990



Source: Canadian Diamond Drilling Association.
Note: These data include approximately 50-60 percent of total drilling activity.

Figure 7

SURFACE AND UNDERGROUND DRILLING CONTRACT DIAMOND DRILLING OPERATIONS BY YEAR – 1973 TO 1989



Source: Statistics Canada Catalogue 26-201.
Note: Data refer to SIC 0921; 1989 is the latest year for which data are available.

exploration for new mines. However, the increase in the amount of underground diamond drilling that took place during the second half of the 1980s represents underground exploration of gold deposits that were at the exploration stage, that is, they were not producing mines, nor had a production decision been made. However, in interpreting Figures 4 to 7, despite the relatively close correlation of exploration expenditures and metres of contract diamond drilling that has generally applied during the period from about 1975 on, it is important to recognize that recent levels of diamond drilling activity provide only a rough indication of recent levels of Canadian exploration activity and that, because of inclusion of underground drilling at producing mines, Figures 4, 5 and 6 may in effect be overstating recent levels of mineral exploration activity.

3. Overall View on Mining Exploration for 1991

This section brings together the information discussed above.

Total exploration expenditures in 1990 amounted to about $751 million, with senior exploration at about $502 million and junior exploration at about $249 million. This preliminary figure is considerably lower than the $1.35 billion of expenditures recorded for 1988 and slightly lower than the $828 million recorded in 1989.

Arriving at an overall total forecast for 1991 requires the comparison of different amounts derived from several sources. The exploration intentions survey indicated that exploration spending in 1991 would be $646 million. As indicated, this figure included $462 million for seniors and $184 million for juniors.

The regression analysis discussed in section 2.4 provides another source of information. The historical relationship between total exploration expenditures and metal prices leads to a figure of $717 million, or somewhat less, as being a fair estimate based on the average yearly metal prices of 1990. Using the average metal prices that prevailed in the latter part of 1990, the same regression analysis produces an estimate of $645 million, which is surprisingly close to the intentions survey estimate of $646 million, with $485 million for seniors and implying $160 million for juniors.

Another approach to developing estimates of total exploration expenditures for 1991 is by adding junior common equity financing (including flow-through shares) to senior company intentions. This is an exercise based on financing trends for 1991. A figure of $462 million for senior exploration spending was obtained from the earlier intentions survey conducted in late 1990, while a figure of $485 million is obtained under the regression analysis when using late 1990 average metal prices. One could say that these levels of expenditure for seniors are more likely to be assured because senior companies are more sure of their sources of funds than juniors. In recognition of the fact that seniors report total spending for the joint ventures of which they are the operators, and because it is not possible to calculate the precise reduction that would be necessary to avoid an overlap, senior exploration spending has been arbitrarily reduced to $450 million.

The level of junior exploration spending is more difficult to forecast because it relies to a large extent on the availability of financing and, in recent years, particularly on flow-through share financing. As discussed in Section A, it is estimated that probably about $40 million of junior flow-through share financing could be raised for 1991. If the level for flow-through share financing turns out to be $40 million, then there would be some $140 million of non-flow-through share financing left to be raised, assuming the realization of total junior exploration intentions (some $180 million) as indicated from the federal-provincial survey. EMR is discounting this level of

junior exploration because the current information on financing does not support that level of junior spending for 1991. A close review of the individual junior company intentions from the federal-provincial survey list and a comparison of individual junior non-flow-through share financings reported in the media and gathered from other available information sources indicate that about $40 million could be fairly certain. Of the remaining $100 million of individual company intentions, EMR believes that perhaps, at most, only 50 percent could be financed, that is $50 million. Adding these values ($40 million of potential flow-through share financing, $40 million of probable non-flow-through share financing and a possible additional $50 million of non-flow-through financing) yields a range of $80 to $130 million for juniors.

On the basis of the above forecast for junior exploration and an expected $450 million of senior exploration spending, EMR is more confident of a total in the range of $530 to $580 million than the levels indicated by either the regression model or the federal-provincial survey.

SECTION B. CURRENT REGIONAL OUTLOOK

4.1 Introduction

This section presents comments from provincial and territorial officials on recent exploration activity and gives an indication of what they expect for 1991.

On an overall basis, provinces and territories indicate that grass-roots exploration is down and exploration is more focused on advanced projects. They further indicate that junior exploration is low and that exploration is being planned and carried out mainly by seniors or by juniors that have received funding from seniors. Exploration emphasis has shifted from precious metals towards polymetallic metals and industrial minerals. Taking into account conditions prevailing on financial markets, some provinces have announced new or improved financial assistance for small mining exploration companies in 1990 and 1991.

4.2 Newfoundland and Labrador

Mineral exploration in Newfoundland during 1990 decreased from the record setting levels in 1988 and 1989.

Major exploration efforts in 1990 were directed towards base metals and gold with a small but increasing effort in industrial minerals. Exploration expenditures during 1990 were mainly directed towards advanced exploration projects. These programs were orchestrated and carried out by senior mining firms with only limited exploration being conducted by the junior exploration company sector.

Claim Staking Statistics

The steady rate of increase in the number of claims in good standing during the period 1983-89 has peaked. This figure declined by approximately 20 000 claims in 1990. This trend appears to be continuing into 1991 with first half statistics now standing at 3350 staked and 39 260 claims in good standing.

Diamond Drilling

Diamond drilling is perhaps the single most important activity involved in, and reflection of, exploration activity. The level of activity experienced in 1988 in Newfoundland and Labrador was a result of a combination of factors not the least of which was exploration capital generated by the flow-through tax incentives. The 1989 and 1990 statistics for diamond drilling are down considerably from the 234 000 metres drilled in 1988 but still represent a very healthy level of activity. The forecast for 1991 is 25 000 metres (± 5000 metres). This substantial decrease in drilling activity does not augur well for the probability of discovery of new mineral deposits.

Exploration Expenditures

The total value of exploration in 1990 represents a 50 percent decrease from 1988. Forecasts for 1991 indicate that this downward trend in exploration spending will continue. Exploration is now focused on the more advanced projects with a significant reduction in the level of grass roots mineral exploration.

Summary

The projections for 1991 are ominous and disconcerting for mineral exploration in Newfoundland and Labrador. All the major exploration indicators–claims staked, claims in good standing, diamond drilling and exploration expenditures–show a significant decrease from previous years. There is little to suggest a reversal in the downward trend in exploration activity. However, there are a number of promising prospects that continue to be explored by a number of senior mining companies in the province.

NEWFOUNDLAND AND LABRADOR EXPLORATION STATISTICS

	1988	1989	1990p	1991f
		(dollars)		
Annual Exploration Expenditures	41 155 481	36 252 686	23 617 000	13 000 000
Claim Staking				
Claims Stakes	26 199	17 190	10 508	6 000
In Good Standing	65 822	63 596	44 833	26 000
Exploration Field Expenditures				
BM-PM	17 559 585	10 970 673	10 019 723	na
Gold	18 698 498	14 895 933	7 054 863	na
Other	457 370	1 364 328	2 245 051	na
		(metres)		
Diamond Drilling				
Production/ Development	17 449	16 355	8 884	na
Exploration	217 382	106 497	84 462	na
Total	234 831	122 852	93 346	25 000

Source: Dept. of Mines and Energy (28/06/90)
BM Base metals; PM Precious metals; f Forecast; p Preliminary; na Not available.

4.3 Nova Scotia

During 1990, exploration activity in Nova Scotia was characterized by moderate levels of expenditure. There was a renewed interest in polymetallic and base metal targets by a few major companies. Industrial minerals and coal held their own, making their normal contribution to overall activity. The junior companies were not as active as in previous years mainly because of the decline of investor interest in gold exploration. Most of the large-scale surface and underground

exploration programs initiated in 1987 and 1988 were suspended. In general, investment in exploration and mine development has been declining since 1988. This trend is due to the cessation of tax incentive programs, depressed metal prices and a general difficulty in raising high-risk capital. Exploration indicators for 1980-90 are outlined on the accompanying table.

The number of new claims staked in 1990 (10 910) was marginally lower than in 1989. The total number of claims in effect at year-end (28 641) also declined, reflecting a relatively high number of lapsing claims.

The estimated total expenditures for all exploration work in 1990 was $10 million, less than half the amount spent in 1989. The amount of diamond drilling performed in 1990 (20 000 m) was proportionately low and half the total for 1989.

Most of the exploration work carried out in the first six months of 1991 has been done by senior companies or by junior companies that have received funding from senior companies. There has been a renewed interest by a number of senior companies that had not been exploring in the province in recent years.

The principal targets in 1991 have been base metals in geological environments long known to be good hosts, particularly the lower Carboniferous basins. The search for polymetallic deposits in Precambrian strata of Cape Breton Island has also increased. Exploration for gold in the Meguma environment has declined considerably, however, three major prospects are on hold pending additional financing.

Claim staking for the first six months of 1991 has been at a slightly lower level than the average for 1990. The total amount of claims in effect at year end is also expected to decline in relation to the 1990 total.

Assessment work reported in the first six months of 1991 (reflecting work carried out in the 12 months prior to reporting) totalled approximately $2 million compared with $11.6 million for the same period in 1990.

A modified forecast generated from data supplied by Energy, Mines and Resources Canada indicates that the total exploration expenditures for 1991 will probably be lower than for 1990, in the range of $5-$8 million.

4.4 New Brunswick

The New Brunswick exploration industry is dominated by six companies representing both the major and junior mineral industry sectors.

The year 1990 ended with the largest number of claims in effect since 1955, even though the number of new claims recorded was down substantially from the previous year. Preliminary data indicate that approximately $18 million was spent on exploration activity in New Brunswick in 1990.

Respondents to a federal government industry survey on forecasted exploration expenditures have indicated that approximately $21.7 million will be spent in New Brunswick in 1991. An analysis of available relevant statistics points out that, during the first two quarters of 1991, mineral claim recordings, claim renewals and office visits and information requests by the industry sector are up over the same period last year. Total claims equivalents at the end of June were 30 247, slightly more than the same period in 1990.

EXPLORATION INDICATORS, NOVA SCOTIA DEPARTMENT OF MINES AND ENERGY, FOR 1980-90

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
New claims	(75 464)	(52 018)	29 690	29 057	19 268	28 500	32 685	33 419	20 132	11 397	10 910
Total claims and claim equivalents in effect	83 135	94 408	52 236	54 310	40 438	41 173	46 086	63 585	43 590	37 745	28 641
Value of assessment work received ($ million)	7.5	8.4	4.1	4.2	2.6	2.3	9.9	26.7	29.0	31.3	16.6
Estimated total exploration expenditures ($ million)	(10.0)	14.6	5.5	6.5	7.3	9.0	21.0	45.0	49.0	22.0	10.0
Total drill footage (1000 metres)		78	24	30	50	45	75	215	110	42	20.0

( ) Numbers in parenthesis are approximate.

The majority of exploration activity will be concentrated on the search for base metals; however, the precious metal sector will also receive its share of exploration expenditures. Indications are that, in 1991, the exploration sector will conduct the standard ground geoscientific surveys; however, there will also be a concentration of funds on trenching and drilling programs.

4.5 Quebec

FLOW-THROUGH SHARE FINANCING AND EXPLORATION EXPENDITURES IN QUEBEC IN 1990 AND 1991

Flow-Through Share Financing

In Quebec, flow-through share financing of exploration expenditures was severely hurt by the economic slowdown and the termination of the Canadian Exploration Incentive Program. The two-year extension of additional deductions for exploration expenses announced by the Quebec government (up to 66 2/3 percent for certain surface exploration expenses) does not seem sufficient by itself to reverse the unfavourable trend that has prevailed since the 1987 stock market crash. Thus, in 1990, funds raised by this financing mechanism amounted to about $48 million, which is less than the $73 million raised in 1989.

This downward trend in flow-through share financing is continuing in 1991. In fact, juniors managed to raise only about $4 million in the first six months. The anticipated economic recovery could improve the situation before the end of the year, but the expected total amount of funds will surely not exceed the $15 to $20 million range.

To help the most dynamic junior mining exploration companies maintain mining activities, in May 1991 the Quebec government set up a one year financial assistance program designed to allow these juniors to carry out exploration projects on their properties. With a $5 million budget and administered by the Société québécoise d'exploration minière (SOQUEM), the program targets Quebec-based junior mining exploration companies that have carried out a minimum of $300 000 worth of mining exploration work in Quebec since January 1, 1988. Further, eligible projects will require expenditures of at least $100 000 and cannot benefit from other government incentives.

FINANCING BY FLOW-THROUGH SHARES AND EXPLORATION EXPENDITURES IN QUEBEC

	1988	1989	1990P	1991
		($ millions)		
Flow-through shares[1]	154	73	47	15-20f
Exploration expenses				
Off-property	331	164	153	141I
On-property	39	32	33	20I
Total	370	196	186	161I

Source: Ministère de l'Energie et des Ressources, Québec.
[1] These amounts include expenses related to financing by limited partnerships.
f Forecast; p Preliminary data; I Intentions data were derived from the survey carried out in the fall of 1990 and were confirmed through a telephone survey in July 1991.

Exploration Expenditures

The results of the annual survey on the spending "intentions" of mining companies point to total exploration expenditures of $161. million, $141 million of off-property expenses and $20 million for on-property expenses. This represents a 13.4 percent decrease from 1990, a decrease over two times more pronounced than the decrease from 1989 to 1990. This decrease is essentially attributable to the deterioration in flow-through share financing, the main financing source for juniors.

However, we note that in the last three years the decrease in total exploration expenditures is not so pronounced as the decrease in flow-through share financing. The decrease is not as pronounced in part because of investments made by producing companies and their subsidiaries. It is also because of exploration activity in the search for industrial minerals (graphite) and metals (chrome, nickel), as well as traditional exploration for gold.

Claims and Diamond Drilling Statistics

The number of metres drilled by diamond drilling companies and the number of recorded claims are two other useful indicators to monitor the evolution of exploration activity. In 1990, diamond drilling remained practically unchanged from 1989, namely 1.30 million metres. For the first five months of 1991, the number stands at 0.48 million metres compared to 0.63 million metres for the corresponding period in 1990.

As for recorded claims, the total number is 16 000 claims in 1990 compared to 27 000 in 1989. For the first four months of 1991, the number of registered claims is 6405, compared to 5918 for the corresponding period in 1990.

4.6 Ontario

In 1989, mineral exploration and development expenditures totalled $560 million in Ontario. These expenditures are estimated to decrease to $420 million in 1990 and are forecast to drop to $355 million by 1991. In 1988 total mineral exploration and development in the province was $757 million. This data includes both field expenditures and overhead costs.

Off- and on-property (general and minesite) exploration expenditures are expected to decrease from $218 million in 1989 to $141 million in 1990 and $124 million in 1991. Minesite development expenditures are anticipated to decrease from $342 million in 1989 to $279 million in 1990 and $232 million by 1991. This data includes both field expenditures and overhead costs.

Senior mining companies were responsible for approximately 72 percent of the off- and on-property field exploration expenditures of $185 million in 1989 compared to 56 percent in 1988. The level of exploration expenditures by junior companies thus accounts for 28 percent in 1989, down from 44 percent in 1988. Percentages for senior companies may be high since funds received from joint venture partners, mostly junior companies, are reported by the senior companies.

The number of claims in good standing in Ontario at the end of April 1991 was about 118 740, down 15 percent from 139 040 claims in April 1990. The number of claims in good standing is considered a good indicator of the level of exploration activity in the previous year. The number of claims in good standing at the end of 1990 was about 125 000, the lowest number since 1982. The number of claims in good standing peaked in 1988 at over 171 000.

Exploration activity is highest in northeastern Ontario. Of the twenty-eight advanced underground or open-pit exploration projects in the province at the end of 1990, 60 percent were located in the northeast.

Approximately 80 percent of the advanced projects are gold properties. As of July 1991, however, many of these projects were inactive. Three base-metal mines are in the development stage (production decision announced) in the Sudbury area of northeastern Ontario.

Ontario's two incentive programs, the Ontario Mineral Incentive Program (OMIP) and the Ontario Prospectors Assistance Program (OPAP), provide financial assistance to qualified individuals and companies involved in mineral exploration and development in Ontario. In April 1990, the Ontario government committed $30 million to the two programs over 3 years. This funding, together with certain amendments to OMIP is intended to lessen the impact of the discontinuation of the federal government's Canadian Exploration Incentive Program (CEIP) in February 1990.

More than 400 Ontario prospectors received OPAP grants of up to $10 000 for the 1990/91 fiscal year. The financial assistance provided under OMIP takes the form of grants up to $300 000 a year covering 30 percent of eligible exploration expenditures. In 1990, $8 million was disbursed under the program to 150 projects.

Special OMIP assistance provides up to 50 percent of eligible expenditures in selected areas that have suffered or are likely to suffer an economic downturn. The Kirkland Lake - Temiskaming, Elliot Lake, Manitouwadge, Atikokan and Beardmore - Geraldton - Longlac - Nakina areas have been chosen for the extra OMIP incentive funding.

4.7 Manitoba

Mineral exploration expenditures for 1990 are forecast to be $37.0 million. This compares to an estimated $38.5 million spent in 1989 and $40.0 million in 1988. Surface diamond drilling for these three years is estimated at 197 000 metres in 1990, 177 896 metres in 1989 and 270 969 metres in 1988. Current indications are that exploration expenditures for 1991 will be comparable to 1990.

The total area of claims recorded in Manitoba during 1990 was 130 105 hectares, as compared to 184 723 hectares recorded in 1989, and 341 722 hectares in 1988. However, total mineral dispositions (which include claims, permits and leases) in good standing at the end of 1990 totalled 2 291 049 hectares, as compared to 1 865 317 hectares and 1 614 483 hectares at the end of 1989 and 1988, respectively.

The strong emphasis placed on gold exploration for most of the 1980s shifted towards base metals which, contrary to gold, exhibited price strength in the late 1980s. In Manitoba, this is evidenced by the fact that all five advanced mining development projects are for base-metal deposits.

Copper-zinc exploration programs were dominant in the Flin Flon-Snow Lake greenstone belt and to a lesser extent in the Lynn Lake region and in southeastern Manitoba. Exploration for nickel continued along the Thompson belt, particularly on its southern extension under Paleozoic cover. Exploration for gold was carried out in the major greenstone belts of Flin Flon-Snow Lake, Lynn Lake, Gods Lake, Island Lake and Rice Lake.

The Manitoba Mineral Exploration Incentive program was announced in the province's 1991/92 budget. This incentive targets new exploration activities in Manitoba by junior exploration companies. Only investments in ventures financed under a flow-through share agreement or limited partnership will qualify. The province is offering investors a 25 percent grant for eligible investments. The marketing will be carried out by registered non-Crown Manitoba Mineral Exploration Investment Corporations. Manitoba Energy and Mines will consider applications for registration beginning January 1, 1992. Eligible flow-through issues will be limited to $50 million and the total cost to the province is estimated at $14.5 million over the life of the program. Enabling legislation through Bill 71 was tabled in the Manitoba Legislature in July.

4.8 Saskatchewan

Saskatchewan Resident Geologists carry out an annual survey of mineral exploration expenditures through telephone interviews of the mining exploration companies and prospecting groups. In January/February of each year, companies and groups are asked to provide an estimate of their current budget on a commodity and area-of-search basis. Since 1987 the survey respondents have also been asked to provide actual expenditures for the previous year.

Although there are about 349 registered property holders in the province, only between 40 and 85 companies (46 in 1991) provide exploration financing and they form the basis of the survey. However, due to unforeseen events, budgets may change significantly during the year. Actual total exploration expenditures exceeded preliminary estimates in 1987 and 1988. A reversal of this trend occurred in 1989 and 1990, after flow-through financing had become less attractive and commodity prices were depressed. The exploration expenditures for 1986 to 1991 from the resident geologists' survey are shown in the table below.

EXPLORATION EXPENDITURES - RESIDENT GEOLOGISTS' SURVEY

	1986	1987[I]	1987[f]	1988[I]	1988[f]	1989[I]	1989[f]	1990[I]	1990[f]	1991[I]
					($ millions)					
Precious metals	19	34	48	55	55	32	22	13	11	6
Base metals	2	2	3	3	6	5	7	7	7	6
Uranium	22	18	18	44[a]	40[a]	47[a]	46[a]	43[a]	37[a]	38[a]
Other	-	-	-	-	-	-	2	2	2	3
Total	43	54	69	102	101	84	77	65	57	53

[a] Includes underground development at Cigar Lake and Midwest Lake uranium test mines.
[I] Intention; [f] final; - Nil.

The marked downturn in mineral exploration expenditures in Saskatchewan since 1988 is consistent with the national trend. In the past few years junior companies have found it increasingly difficult to raise exploration and development capital. As a result, the trend is towards more company-financed explorations from the major corporations.

Diamond exploration continues into its third year. About 80 companies and individuals hold claims under disposition in southern Saskatchewan, mainly in a belt extending eastwards from Prince Albert. The potential for discovering economic diamond deposits is presently a matter of speculation, although the high degree of interest coupled with encouraging exploration results could hasten such a discovery.

Overall, mineral exploration expenditures in Saskatchewan are expected to continue to fall. The 1991 estimate is $48.0 million lower than the peak expenditures of $101.0 million in 1988, equivalent to a drop of 47 percent.

4.9 Alberta

Non-petroleum mineral exploration expenditures are expected to decline slightly in 1991. Exploration expenditures are forecast to drop to $7.1 million, down from an estimated $7.6 million for 1990. Most of this spending continues to be focused on coal exploration. The number of coal exploration drillholes is forecast to be 876 for 1991 compared to 723 in 1990 and 589 in 1989.

In 1990, over three quarters of Alberta's non-petroleum exploration spending was directed to coal. Uranium was next, attracting just under 20 percent of total mining exploration dollars. The remainder represented modest expenditures on precious metals, nonmetals and structural materials. In 1990, mineral rights were granted in northwest Alberta. Exploration permits were issued covering 780 000 hectares. The value of the assessment work is anticipated to be about $8 million, of which $1 million was spent in 1990.

The sluggish performance of the mining industry within an economy slowed by the recession has made financing generally more difficult. Nor have the unique features of flow-through share financing noticeably enhanced the ability of the industry to raise capital using this vehicle. In 1990 flow-through share financing in Alberta continued to decline to about $75-$80 million from about $120 million in 1989. Little of this applied to the mining industry. In 1991, flow-through financing is expected to be about one half of 1990 levels.

4.10 British Columbia

Mineral claim staking increased slightly from the previous year's level with 98 256 new mineral units recorded in 1990, as compared to 97 328 units in 1989 and 87 285 units in 1988. Diamond drilling activity increased from 683 000 metres in 1988 to 717 000 metres in 1989. Total 1990 exploration expenditures, based upon preliminary federal government surveys, are estimated at $226 million, up by over 21 percent from the final 1989 total of $186 million.

New exploration discoveries were few, since most of the exploration activity was concentrated near existing "hot spots" such as the Stewart-Iskut River area including Eskay Creek, and the northern Quesnel area, including Mount Milligan.

DISTRIBUTION OF EXPLORATION EXPENDITURES IN BRITISH COLUMBIA BY COMMODITY SOUGHT

	1986	1987	1988	1989
			($000)	
Precious metals	36 793	15 126	161 992	116 166
Base metals	8 623	114 952	22 633	27 610
Iron	0	0	0	5
Uranium	0	383	0	0
Other metals	942	1 060	1 896	1 244
Nonmetals	4 895	3 753	580	961
Coal	9 261	4 967	4 914	2 531
Commodity not specified	2 626	2 311	4 756	1 215
Total	63 140	142 552	196 771	149 732

Note: Exploration does not include extensions to deposits already being mined or committed to production. Field exploration costs only. Overhead not included.

The search for rich precious and base-metal deposits and for bulk mineable base-precious-metal deposits, particularly copper-gold, dominated industry activity. Major companies accounted for a large share of the year's expenditures as the junior exploration companies and prospectors, the leading mine finders in the province, had to curtail their activities as they adjusted to the end of flow-through financing. The province's Prospectors Assistance Program was curtailed in 1991, which could have a further impact on prospector activity in 1991 and beyond.

Geddes Resources continued exploration at the huge Windy Craggy copper-gold deposit in the northwest corner of the province and discovered a new copper zone.

Cominco Ltd. and Redfern Resources Ltd. met with significant success, highlighted by a spectacular 50 metre intersection at the Tulsequah Chief massive sulphide deposit.

Cominco Ltd. and Prime Resources Group Inc. brought into production the $65 million Snip gold deposit.

Corona Corporation and Prime Resources Group Inc. continued with significant progress at the rich Eskay Creek gold-silver base-metal deposit, highlighted in August by a spectacular intersection of the 21B zone in the decline.

Placer Dome Inc. acquired control of the giant Mount Milligan copper-gold deposit in November and, after further drilling, proceeded with a feasibility study.

Imperial Metals Corporation and Corona Corporation completed a favourable feasibility study for the Mt. Polley copper-gold deposit and concluded that this $131.5 million project would have a payback period of 3.6 years.

Curragh Resources Incorporated and Asturiana de Zinc (Spain) are proposing to develop the Stronsay (formerly named Cirque) lead-zinc deposit in northeast British Columbia.

Crowsnest Resources Limited continued its investigation of a potential new 800 000 tonne per year thermal coal mine at Telkwa, near Smithers, British Columbia; however, this project has again become dormant.

Fording Coal Limited received approval-in-principle for the Henretta Dragline extension at the Elkford mine in southeast British Columbia.

All major projects, such as Windy Craggy, Eskay Creek, Mt. Milligan and Stronsay are at Stage I of the Mine Development Review Process. Mount Polley is in Stage II of the review process and is expected to receive approval-in-principle before the end of 1991.

4.11 Northwest Territories

In 1990 the Northwest Territories ranked fifth in the value of Canada's metallic mineral production, supplying 5.9 percent of all metallic minerals. Metal shipments were valued at $881 million, a 9.1 percent increase from $805 million in 1988. Data for 1989 show mining accounted for 36 percent of the Northwest Territories Gross Domestic Product. The Northwest Territories, in 1990, produced 24.7 percent of Canada's zinc, 17 percent of its lead, 9.1 percent of its gold, 16.6 percent of its cadmium and 2.1 percent of its silver.

Approximately 60 percent of the estimated 2200 jobs in the Northwest Territories mining sector are held by Territorial residents. Participation by native northerners has increased to about 12 percent of jobs, due to the efforts of both industry and communities. The mining sector paid $123 million or 13 percent of all salaries in the Northwest Territories during 1989.

Changes to flow-through share laws and the Canadian Exploration Incentive Program (CEIP) reduced the attractiveness of exploration investments. These changes, combined with lower gold prices, the strong Canadian dollar and high interest rates, resulted in a decline in the amount of exploration capital available. Mineral exploration in the Northwest Territories fell from $112 million in 1988 to $55 million in 1989 and $38 million in 1990. The total number of claims in good standing has decreased since the early 1980s. In 1990, mineral claims covering 355 345 hectares were recorded while 563 548 hectares lapsed. Claims in good standing covered 2 947 349 hectares compared with 4 256 528 hectares in 1980. The Northwest Territories share of total exploration investment in 1988, 1989 and 1990 remained constant at approximately 5.2 percent of the total exploration investment in Canada.

Advanced exploration properties include:

George Lake Joint Venture - (Homestake Mining Company Ltd. and Kerr-McGee Corporation) explored for gold, 525 kilometres northeast of Yellowknife. The company plans 24 000 metres of additional diamond drilling during 1991.

BHP-Utah Mines Ltd. - continued work on the Ulu gold property, 550 kilometres north of Yellowknife. The company plans 15 000 metres of diamond drilling in 1991.

Athabaska Gold Res. and Chevron Minerals Ltd. - have defined 557 000 tonnes grading 12.3 grams per tonne gold on the Nicholas Lake deposit 75 kilometres north of Yellowknife.

During 1990, the NorthWest Gold Corp. commenced production at the Colomac mine, a large open-pit gold mine 200 kilometres north of Yellowknife (the mine went into care and maintenance in July 1991). The Giant mine in Yellowknife was purchased by Royal Oak Resources. The Nerco CON mine, also in Yellowknife, refurbished one of their shafts and expanded their mill capacity. The company plans to build an autoclave circuit adjacent to the existing mill, at a cost of $19.4 million. The pressure oxidation process will recover gold from pre-existing mining waste material and allow processing of refractory ore. The Lupin mine, 400 kilometres northeast of Yellowknife invested in internal infrastructure and development to access deeper reserves. Development on the Kiggavik property, 100 kilometres west of Baker Lake, is delayed pending the completion of the federal environmental review.

4.12 Yukon

In 1991, exploration spending by junior mining companies is expected to remain at a very low level. This can be attributed to the continuing difficulty that such companies are experiencing in raising risk capital, which is the result of depressed share prices, high interest rates, declines in gold and silver prices, and the cancellation of both the earned depletion allowance and the Canadian Exploration Incentive Program.

There has recently been a revival of interest by major companies in base-metal exploration, and expenditures on such projects are expected to be at or possibly slightly above last year's level. Curragh Resources Inc.'s Mount Hundere project is expected to begin shipping concentrate by the end of July 1991.

There is currently a sense of uncertainty in the industry concerning legislative and regulatory changes that are currently being proposed, most particularly in connection with the settlement of the Yukon Indian land claim. However, prospecting activity by individuals remains at a high level, and there is no evidence that any junior or major company has modified its exploration plans as a result of this uncertainty.

A survey completed by DIAND late in 1990 indicated that actual expenditures in the Yukon in 1990 were only about $11 million. Another survey completed by the Yukon Chamber of Mines in August 1991 indicated that expenditures in 1991 may be somewhat higher at $14-$15 million. These figures are much lower than the preliminary estimate for 1990 and forecast for 1991 reported in Table 3a, which suggests that actual spending has dropped considerably below the figures indicated by the "intentions survey."

SECTION C. HISTORICAL PERSPECTIVE ON MINERAL EXPLORATION ACTIVITY IN RECENT YEARS

5.1 Introduction

This section presents an overview of various aspects of mineral exploration in recent years. Patterns of exploration spending are shown by region, by commodity sought and by type of company. The 1990 and 1991 levels of exploration activity are described on a preliminary and forecast basis respectively. The data applicable to these two years were collected between December 1990 and March 1991.

5.2 Exploration Expenditures by Region

Tables 3a, 3b and 4 are based on the federal-provincial survey of mining and exploration companies.

Table 3a shows current dollar expenditures on mineral exploration in Canada, by province, for the 1985 to 1991 period. Table 3b reports the same information, but in 1990 dollars. The figures for "fieldwork" do not include overhead expenses. Table 4 presents these data as percentages.

Until 1989, the most active exploration areas were Ontario and Quebec, which, in 1988, jointly accounted for 58 percent of total Canadian exploration spending. In 1988 and 1989 exploration expenditures in Ontario exceeded those in Quebec for the first time since 1977. Exploration spending in British Columbia as a percentage of Canadian exploration has risen rapidly in the second half of the 1980s and, in 1989, was at levels comparable to exploration expenditures in Quebec. In 1990 and 1991 exploration spending in British Columbia is expected to exceed spending in Quebec and Ontario for the first time since 1981. Indications are that, in 1990, exploration expenditures in Ontario declined by 35 percent relative to 1989, leaving Ontario in third place. Ontario is likely to remain in third place in 1991. Total national exploration expenditures are expected to decrease by 9 percent in 1990 relative to 1989 and by another 14 percent in 1991.

In 1989, exploration spending relative to 1988 was down in all provinces except Manitoba, although the decline in Alberta that year was insignificant. In 1990, preliminary totals indicate that exploration spending was up relative to 1989 in British Columbia, the Yukon, Alberta and New Brunswick and down in all other provinces, most notably in Nova Scotia, where 1990 exploration expenditures were down by 60 percent relative to 1989. Exploration intentions for 1991 indicate that increased expenditures are expected relative to those in 1990, in the Yukon, the Northwest Territories, New Brunswick and Nova Scotia.

5.3 Exploration Expenditures by Type of Company

Figures 8a depicts field exploration expenditures by type of company for the years 1985-89. Comparable field expenditures are not yet available for 1990 and 1991 so these years are not shown in Figure 8a. Total exploration expenditures (fieldwork plus overhead) for the years 1989, 1990 preliminary and 1991 spending intentions are portrayed in Figure 8b. Comparable fieldwork plus overhead totals data are not available for the years 1985-89 so those years cannot be shown in Figure 8b.

TABLE 3A. MINERAL EXPLORATION EXPENDITURES IN CANADA, BY PROVINCE, 1985-91

Province	Field Work Only				Total Exploration[1]		
	1985	1986	1987	1988	1989	1990pe	1991f
	(Current $ Millions)						
Newfoundland	11.9	12.3	27.7	37.7	36.2	23.6	16.8
Nova Scotia	7.8	17.2	41.6	46.7	21.4	8.7	9.2
New Brunswick	12.1	10.8	9.1	13.8	13.6	18.5	21.7
Quebec	135.2	241.4	415.5	328.2	185.0	175.7	150.7
Ontario	93.2	136.8	308.1	343.6	217.8	141.2	123.8
Manitoba	33.7	26.3	40.0	30.0	37.0	36.6	35.0
Saskatchewan	39.4	36.8	63.5	61.1	63.3	57.6	51.3
Alberta	14.7	3.0	2.5	4.3	6.2	7.6	7.1
British Columbia	73.0	63.1	142.6	196.8	186.6	226.3	166.8
Yukon Territory	22.7	27.9	29.0	38.6	15.1	22.1	27.0
Northwest Territories	46.8	35.8	59.0	66.5	45.7	33.2	36.7
Total Field Work (Excluding Overhead)	490.5	611.4	1 138.6	1 167.3	703.5	na	na
Total Exploration (Including Overhead)	605.8	723.3	1 300.0	1 350.0	827.9	751.2	646.2

Sources: Federal-provincial survey of mining and exploration companies for 1985-89; the 1990 preliminary estimate and 1991 forecast were derived from federal-provincial surveys co-ordinated by Statistics Canada and EMR.

1 "Total Exploration" includes related overhead expenditures; for the years 1985-88, totals with overhead were calculated by multiplying the federal-provincial field expenditures by the ratio total/field from Statistics Canada.

pe Preliminary estimate; f Forecast; na Not available.

Figures may not add to totals due to rounding.

TABLE 3B. MINERAL EXPLORATION EXPENDITURES IN CANADA, BY PROVINCE, 1985-91

Province	Field Work Only				Total Exploration[1]		
	1985	1986	1987	1988	1989	1990pe	1991f
	(1990 $ Millions)						
Newfoundland	14.4	14.6	31.3	40.7	37.3	23.6	16.2
Nova Scotia	9.5	20.4	47.0	50.4	22.0	8.7	8.9
New Brunswick	14.7	12.8	10.3	14.9	14.0	18.5	20.9
Quebec	163.9	285.7	469.5	354.0	190.5	175.7	145.2
Ontario	113.0	161.9	348.1	370.7	224.3	141.2	119.3
Manitoba	40.8	31.1	45.2	32.4	38.1	36.6	33.7
Saskatchewan	47.8	43.6	71.8	65.9	65.2	57.6	49.4
Alberta	17.8	3.6	2.8	4.6	6.4	7.6	6.8
British Columbia	88.5	74.7	161.1	212.3	192.2	226.3	160.7
Yukon Territory	27.5	33.0	32.8	41.6	15.6	22.1	26.0
Northwest Territories	56.7	42.4	66.7	71.7	47.1	33.2	35.4
Total Field Work (Excluding Overhead)	594.5	723.6	1 286.6	1 259.2	724.5	na	na
Total Exploration (Including Overhead)	734.3	856.0	1 468.9	1 456.3	852.6	751.2	622.5

Sources: Federal-provincial survey of mining and exploration companies for 1985-89; the 1990 preliminary estimate and 1991 forecast were derived from federal-provincial surveys co-ordinated by Statistics Canada and EMR.

1 "Total Exploration" includes related overhead expenditures; for the years 1985-88, totals with overhead were calculated by multiplying the federal-provincial field expenditures by the ratio total/field from Statistics Canada.

pe Preliminary estimate; f Forecast; na Not available.

Figures may not add to totals due to rounding.

TABLE 4. MINERAL EXPLORATION EXPENDITURES IN CANADA, BY PROVINCE, 1985-91

Province	Field Work				Total		
	1985	1986	1987	1988	1989	1990pe	1991f
	(Percentage distribution)						
Newfoundland	2.4	2.0	2.4	3.2	4.4	3.1	2.6
Nova Scotia	1.6	2.8	3.7	4.0	2.6	1.2	1.4
New Brunswick	2.5	1.8	0.8	1.2	1.6	2.5	3.4
Quebec	27.6	39.5	36.5	28.1	22.3	23.4	23.3
Ontario	19.0	22.4	27.1	29.4	26.3	18.8	19.2
Manitoba	6.9	4.3	3.5	2.6	4.5	4.9	5.4
Saskatchewan	8.0	6.0	5.6	5.2	7.6	7.7	7.9
Alberta	3.0	0.5	0.2	0.4	0.8	1.0	1.1
British Columbia	14.9	10.3	12.5	16.9	22.5	30.1	25.8
Yukon Territory	4.6	4.6	2.5	3.3	1.8	2.9	4.2
Northwest Territories	9.5	5.9	5.2	5.7	5.5	4.4	5.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

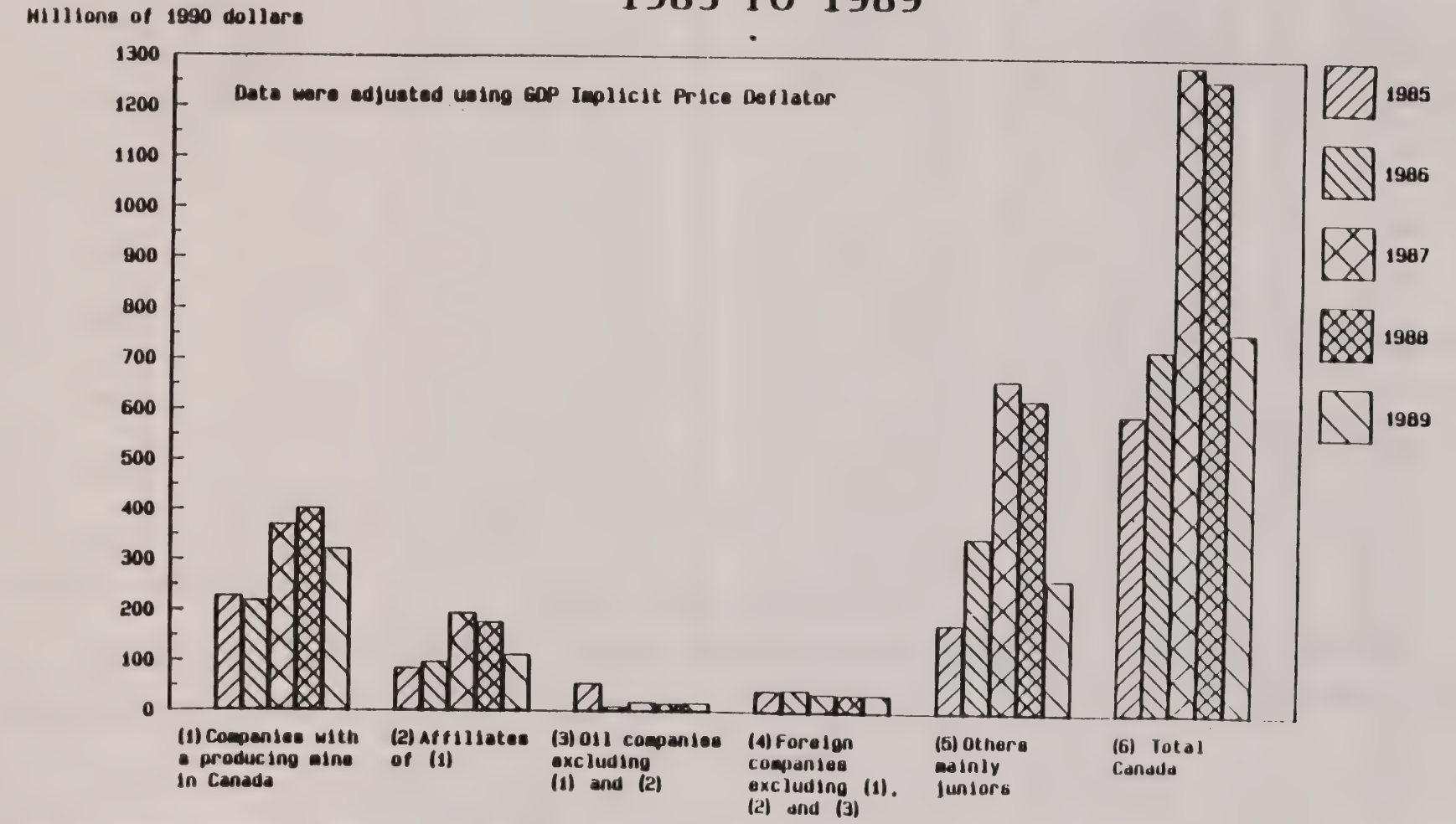
Sources: Federal-provincial survey of mining and exploration companies for 1985-89; the 1990 preliminary estimate and 1991 forecast were derived from federal-provincial surveys co-ordinated by Statistics Canada and EMR.

pe Preliminary estimate; f Forecast.

Note: The percentages from 1985-88 are calculated on field work only, but those for 1989-91 are based on total expenditures, which include related overhead.

Figure 8a

CANADIAN EXPLORATION EXPENDITURES (FIELD WORK ONLY) BY TYPE OF COMPANY 1985 TO 1989

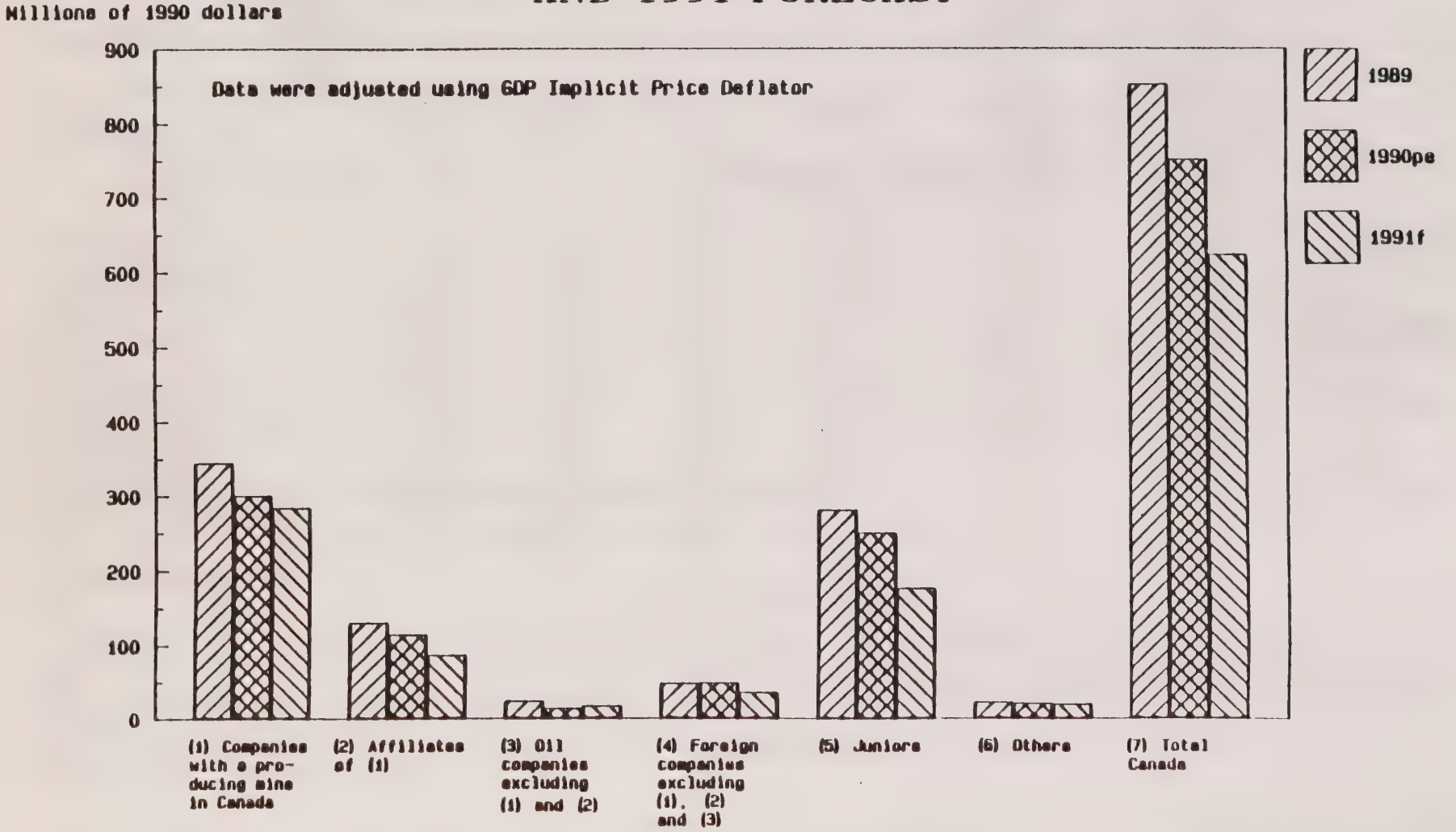


Source: Federal-provincial survey of mining and exploration companies.

Note: Overhead expenditures are not included.

Figure 8b

CANADIAN EXPLORATION EXPENDITURES (FIELD WORK PLUS OVERHEAD) BY TYPE OF COMPANY, 1989 WITH 1990 PRELIMINARY ESTIMATE AND 1991 FORECAST



Source: Federal-provincial survey of mining and exploration companies for 1989.
pe Preliminary estimate; f Forecast.

Note: Overhead expenditures are included.

Over the period 1985-91, non-petroleum mineral exploration by oil companies declined in constant dollar terms by more than 60 percent, while that by foreign companies declined by more than 70 percent.

Exploration by producing companies and their affiliates peaked in 1987/88 and appears to have declined moderately since then. This decline may actually portray lower contributions by junior companies to joint venture projects operated by senior companies. Expenditures of this nature are reported in total by project operators (mostly senior companies).

Figure 9 portrays Canadian current dollar exploration expenditures for the period 1983-91. Figure 10 portrays Canadian exploration expenditures in 1990 dollars for the period 1969-91. From 1983 to 1987, exploration expenditures by junior companies increased almost tenfold, from about $71 million in 1983 to almost $700 million in 1987. Exploration by junior companies, which in 1983 accounted for about 15 percent of total exploration expenditures, increased to more than two thirds of the total. In 1988, expenditures by junior companies began to decline. This decline appears to have continued through 1989, 1990 and 1991.

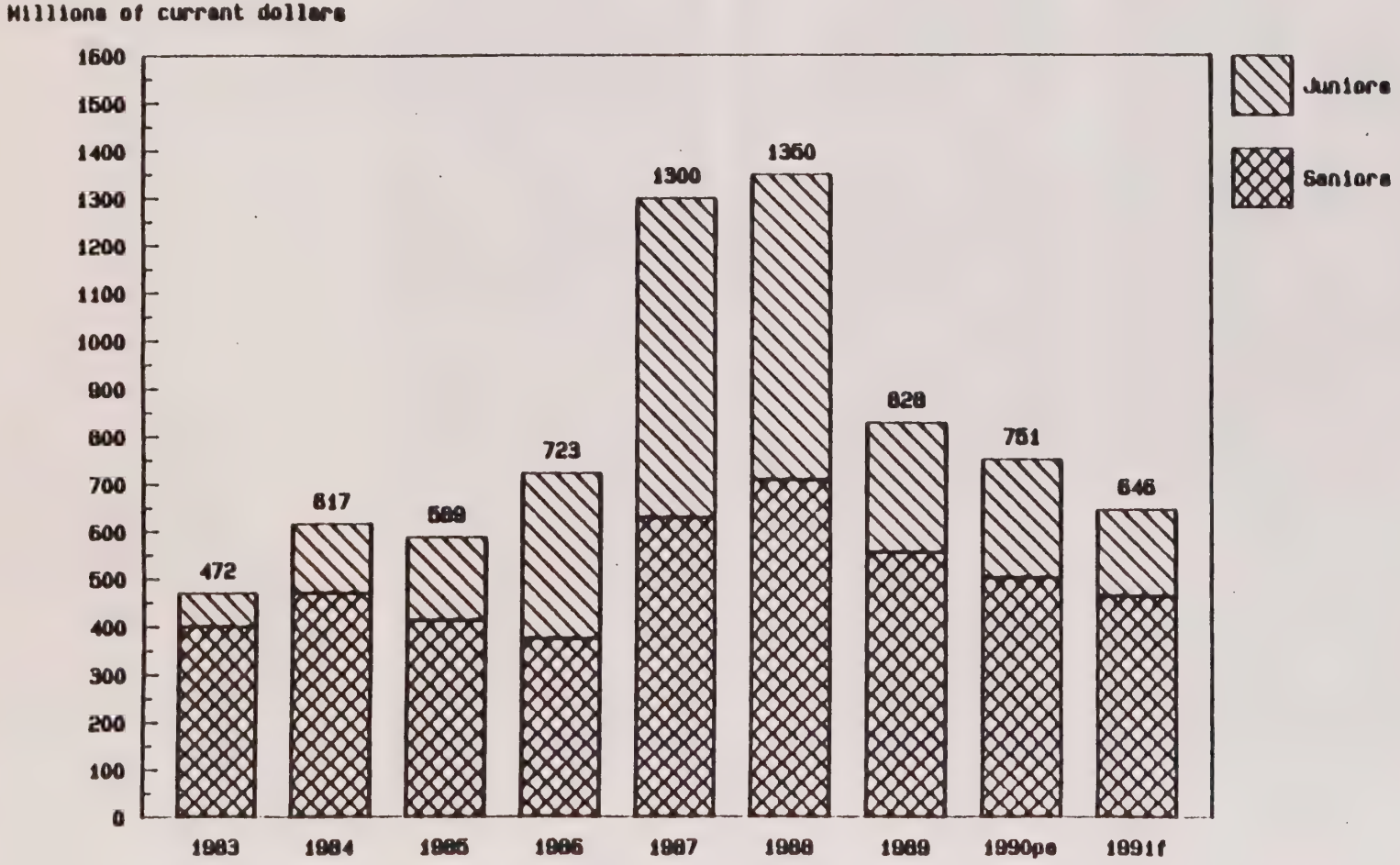
The fact that junior companies provided about two thirds of total Canadian exploration spending in 1987 and 1988 is not apparent in the bar graphs and may be explained as follows. From 1984 on, a significant amount of exploration money was provided by junior companies for joint venture exploration projects operated by senior companies. As Canadian exploration expenditure surveys ask that exploration spending be reported by project operators, and because senior companies generally did not contribute large amounts of money to projects operated by junior companies, the exploration surveys have tended to overstate the contributions of the seniors and have understated those of the juniors to Canadian exploration spending during the mid-1980s.

5.4 Exploration Expenditures by Type of Commodity Sought

Figure 11 shows total Canadian exploration expenditures by commodity or commodity group for the period 1985-89 and gives an indication of the changing commodity emphasis of exploration. In 1988, precious metals accounted for 82 percent of total exploration spending in Canada (an estimated 95 percent of this was directed at gold), while base metals accounted for 13 percent, uranium 2 percent and all other mineral commodities, including coal 3 percent. In 1989, there was a significant drop in the percentage of national expenditures allocated to precious metals and an increase in the percentage allocated to base metals, that is, precious metals 67 percent and base metals 23 percent. In current dollars, exploration expenditures for precious metals in 1989 were only half those of 1988, while exploration expenditures for base metals remained about the same. In percentage terms in 1989, uranium exploration accounted for 4 percent of Canadian exploration spending and the other mineral commodities, including coal, accounted for 6 percent.

Figure 9

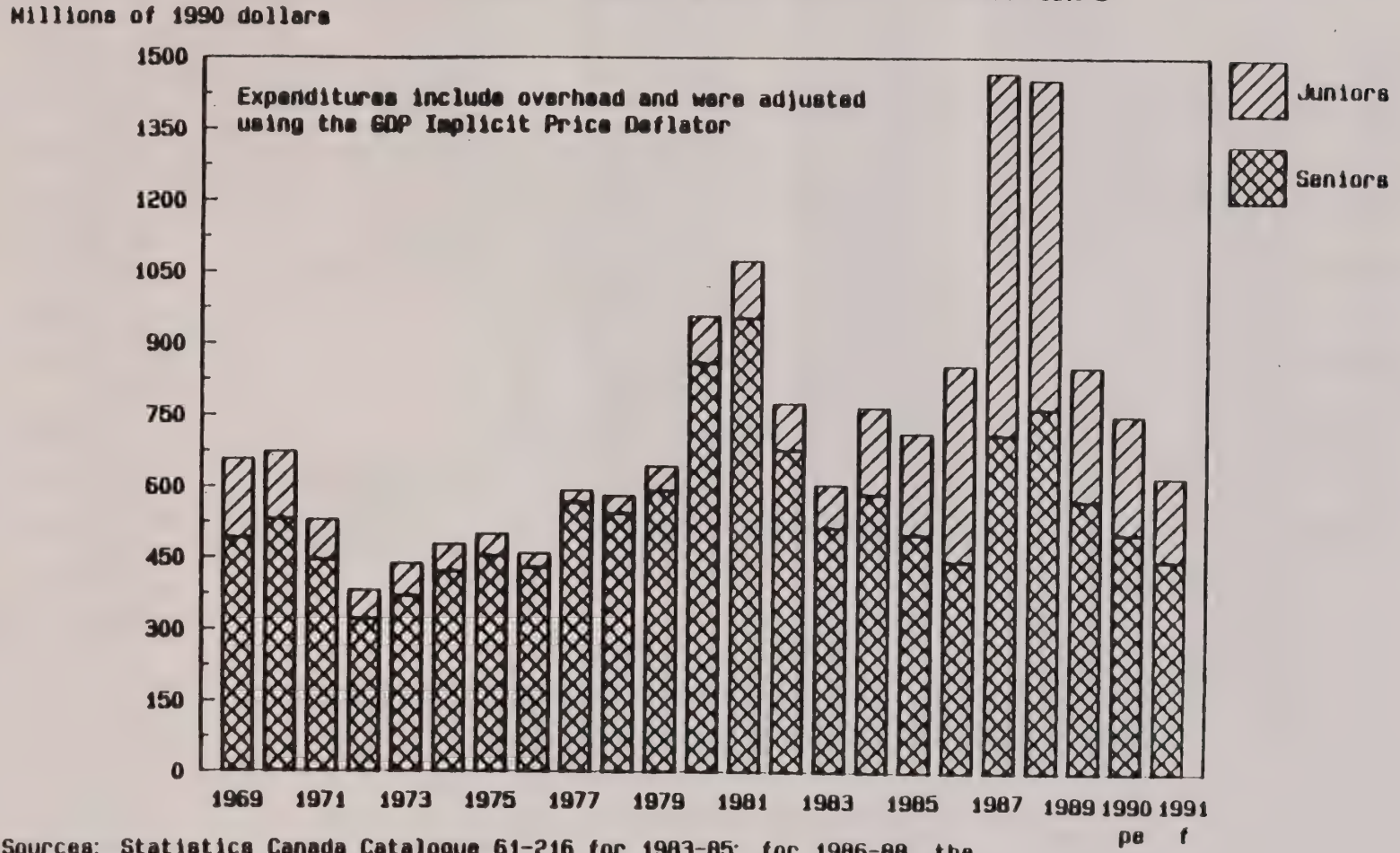
TOTAL EXPLORATION EXPENDITURES 1983 TO 1989 WITH 1990 PRELIMINARY ESTIMATE AND 1991 FORECAST



Sources: For 1983-85, Statistics Canada (Catalogue 61-216); for 1986-88, the federal-provincial field expenditures were multiplied by the ratio total/field from Statistics Canada. The 1990 preliminary estimate and 1991 forecast were derived from federal-provincial surveys co-ordinated by Statistics Canada and EMR.
pe Preliminary estimate; f Forecast.

Figure 10

TOTAL EXPLORATION EXPENDITURES 1969 TO 1989 JUNIOR/SENIOR SPLIT WITH PRELIMINARY ESTIMATE FOR 1990 AND 1991 FORECAST

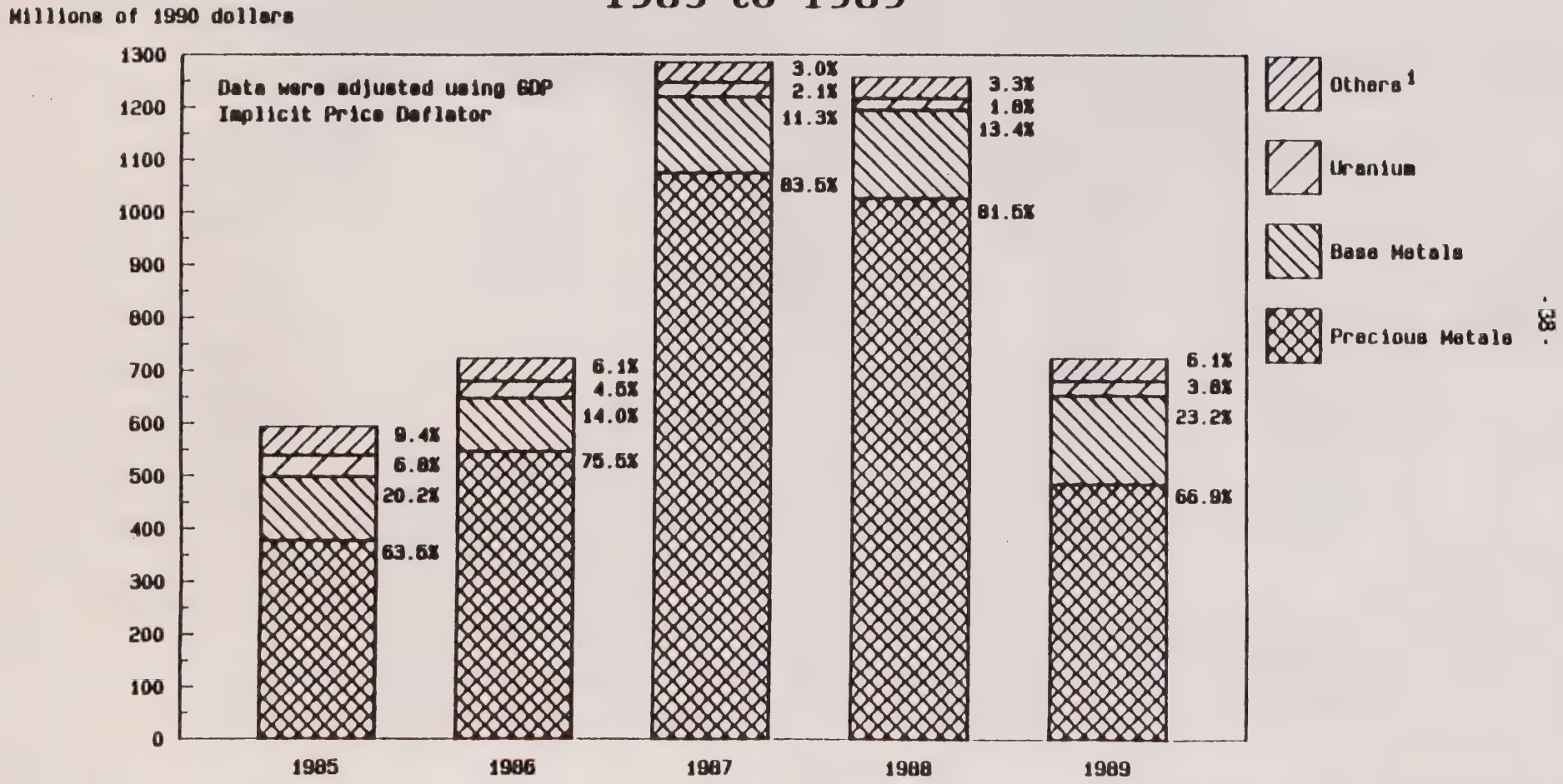


Sources: Statistics Canada Catalogue 61-216 for 1983-85; for 1986-88, the federal-provincial field expenditures were multiplied by the ratio total/field from Statistics Canada. The 1990 preliminary estimate and 1991 forecast were derived from federal-provincial surveys co-ordinated by Statistics Canada and EMR.

pe Preliminary estimate; f Forecast.

Figure 11

CANADIAN EXPLORATION EXPENDITURES DISTRIBUTION BY COMMODITY SOUGHT 1985 to 1989



ource: Federal-provincial survey of mining and
ploration companies.
ote: Overhead expenditures are not included.

1 Others include ferrous metals, other metals, nonmetals (including coal), and "not specified".

SECTION D. HISTORICAL PERSPECTIVE ON FLOW-THROUGH SHARE FINANCING ACTIVITY 1983-91

The evolution of flow-through shares as a source of financing for exploration is shown in Figure 12. Funds raised by flow-through shares peaked at $1183 million in 1987.

The proportion of total exploration expenditures accounted for by flow-through share financing increased from about 7 percent in 1983 to more than 90 percent in 1986 and 1987. In 1988, however, the level of flow-through financing of mineral exploration declined to approximately 60 percent of total spending, mainly as a result of decreased participation by senior companies in the flow-through share market. The downward trend has continued in 1989 and 1990, and will continue in 1991 (Table 5).

It should be noted that exploration expenditures and amounts financed by flow-through shares cannot realistically be directly compared. Exploration data are compiled on a calendar-year basis, whereas the amount of flow-through share funds raised is compiled on a taxation-year basis. Since 1986, this latter amount has included money raised for spending in the following January and February, the so-called "look-back period." For example, some of the money raised in 1987 would have been spent in early 1988.

The increase in flow-through share funding has witnessed a concurrent increase in the proportion of total exploration by junior mining companies. It is the juniors who made the greatest use of the flow-through share mechanism in 1987 and 1988. It is estimated that juniors accounted for close to 80 percent of the total amount raised by flow-through shares in 1988. As was pointed out earlier in this report, even though juniors continued to account for by far the greatest part of flow-through share funded exploration, it was they who felt the brunt of the reduced level of flow-through share financing since 1989.

TABLE 5. RATIO OF FLOW-THROUGH FINANCING TO TOTAL EXPLORATION EXPENDITURES, 1983-91

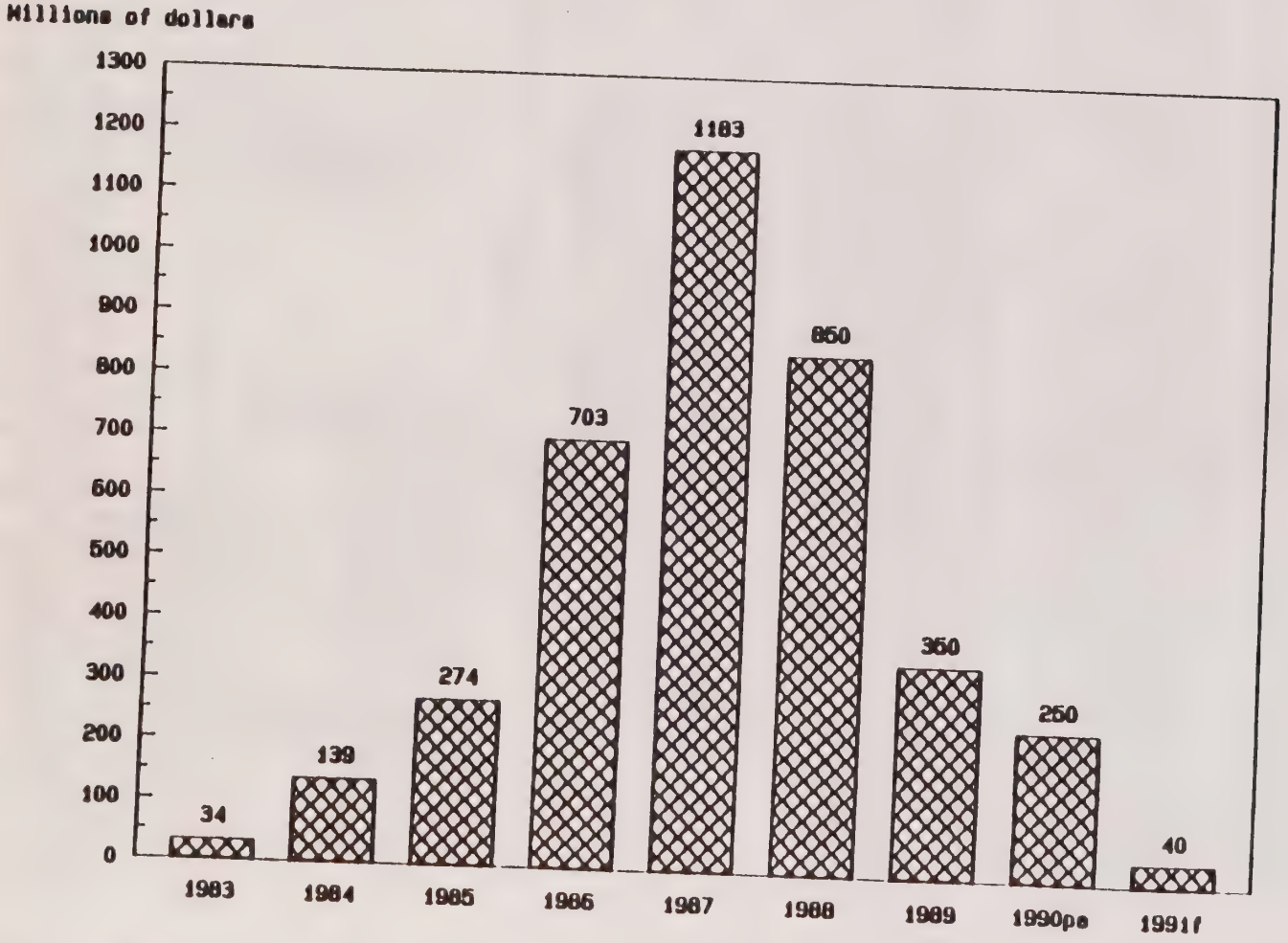
Year	Total Exploration Expenditures	Flow-Through Share Financing	Percentage Flow-Through Financing to Total Exploration Expenditures
	($ million)		(percent)
1983	472	34	7
1984	617	139	23
1985	589	274	47
1986	698	703	100
1987	1 300	1 183	95
1988	1 350	850	63
1989	828	350	42
1990p	750	250	33
1991f	530-580	40	7

p Preliminary; f Forecast.

Beginning in 1986, some of the flow-through funds raised were actually spent in January and February of the subsequent year (the so-called "look back" period). Over the period 1983-90 inclusive, flow-through shares will have provided some 57 percent of total Canadian non-petroleum mineral expenditures.

Figure 12

FLOW-THROUGH SHARE FINANCING LEVELS 1983 TO 1991



Source: Energy, Mines and Resources Canada.
pe Preliminary estimate; f Forecast as of July 1, 1991.

Document: 830-399

48E CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

Rapport sur les dépenses d'exploration minière et le financement par actions accréditives

Fédéral

Halifax (Nouvelle-Écos
Du 22 au 24 septembre 19

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RAPPORT SUR LES DÉPENSES D'EXPLORATION MINIÈRE ET LE FINANCEMENT PAR ACTIONS ACCRÉDITIVES

PAR LE

GROUPE DE TRAVAIL INTERGOUVERNEMENTAL
SUR L'INDUSTRIE MINÉRALE

**PRÉPARÉ POUR LA
CONFÉRENCE DES MINISTRES DES MINES
HALIFAX (NOUVELLE-ÉCOSSE)**

Septembre 1991

Energy, Mines and Resources Canada
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AVANT-PROPOS

Le présent rapport a pour but de présenter une vue globale de la situation actuelle des dépenses d'exploration minière et du financement par actions accréditives au Canada. Les données et points de vue apparaissant dans le rapport ont été réunis et approuvés par le Groupe de travail intergouvernemental sur l'industrie minérale.

La rédaction du présent rapport a été coordonnée par le Secteur de la politique minérale du ministère de l'Énergie, des Mines et des Ressources (EMR), qui a préparé les rapports compilés pour les Conférences des ministres des Mines de 1988, 1989 et 1990.

Tout au long du rapport, l'expression «exploration minière» désigne la recherche de métaux, de minéraux non métalliques et de charbon, mais non de sables pétrolifères et bitumineux, de pétrole et de gaz.

SOMMAIRE

Selon les données préliminaires provenant des enquêtes fédérales-provinciales, les dépenses totales d'exploration minière se sont chiffrées à 750 millions de dollars en 1990. Il s'agit d'une baisse légère par rapport aux 828 millions dépensés en 1989 mais considérable comparativement aux niveaux de 1987 et 1988, soit près de 1,3 milliard et 1,35 milliard de dollars respectivement.

Dans l'ensemble, les travaux d'exploration dans les provinces et territoires en 1991 devraient accuser un recul par rapport à 1990 en raison de la diminution du financement par actions accréditives. EMR estime actuellement que les sommes consacrées à l'exploration en 1991 se situeront probablement entre 530 et 580 millions de dollars.

Selon EMR, les sommes recueillies par actions accréditives en 1990 auraient été de l'ordre de 250 millions, soit environ 100 millions de moins que les 350 millions réunis en 1989. Toujours selon EMR, le niveau du financement par actions accréditives chutera aux alentours de 40 millions de dollars en 1991.

TABLE DES MATIÈRES

Page

PARTIE A. SITUATION ACTUELLE DE L'EXPLORATION MINIÈRE ET DU FINANCEMENT PAR ACTIONS ACCRÉDITIVES AU CANADA 1

1. Perspectives du financement par actions accréditives en 1991 1

1.1 Introduction 1

1.2 Situation récente 1

1.3 Données sur les Bourses 2

1.4 Perspectives 4

2. Perspectives de l'exploration en 1991 5

2.1 Introduction 5

2.2 Enquêtes d'EMR et de Statistique Canada sur les intentions de dépenses d'exploration pour 1991 5

2.3 Dépenses d'exploration des grandes sociétés en 1990 et 1991 9

2.4 Perspectives d'exploration d'après les prix des métaux 10

2.5 Travaux récents de forage au diamant 13

3. Vue d'ensemble de l'exploration minière en 1991 19

Page

PARTIE B. SITUATION RÉGIONALE 22

4.1 Introduction 22

4.2 Terre-Neuve et le Labrador 22

4.3 Nouvelle-Écosse 24

4.4 Nouveau-Brunswick 27

4.5 Québec 27

4.6 Ontario 29

4.7 Manitoba 31

4.8 Saskatchewan 32

4.9 Alberta 34

4.10 Colombie-Britannique 34

4.11 Territoires du Nord-Ouest 37

4.12 Yukon 38

PARTIE C. ANALYSE RÉTROSPECTIVE DES TRAVAUX D'EXPLORATION MINIÈRE AU COURS DES DERNIÈRES ANNÉES 40

5.1 Introduction 40

5.2 Dépenses d'exploration par région 40

5.3 Dépenses d'exploration par catégorie de société 44

5.4 Dépenses d'exploration par catégorie de produits de base 49

PARTIE D. ANALYSE RÉTROSPECTIVE DU FINANCEMENT PAR ACTIONS ACCRÉDITIVES, 1983 À 1991 51

LISTE DES FIGURES

		Page
Figure 1	Prix mensuel moyen de l'or, janvier 1986 à juillet 1991	3
Figure 2	Dépenses totales d'exploration et prix des métaux canadiens décalés d'une année	11
Figure 3	Dépenses d'exploration des grandes sociétés et prix des métaux canadiens décalés d'une année	12
Figure 4	Forage de surface et souterrain, par mois - janvier 1985 à mai 1991	15
Figure 5	Forage de surface et souterrain, par trimestre - 1985 à 1991	16
Figure 6	Forage de surface et souterrain, par année - 1973 à 1990	17
Figure 7	Forage de surface et souterrain: travaux de forage au diamant à façon, par année - 1973 à 1989	18
Figure 8a	Dépenses d'exploration au Canada (travaux sur le terrain seulement) par catégorie de société, 1985 à 1989	45
Figure 8b	Dépenses d'exploration au Canada (travaux sur le terrain plus frais généraux) par catégorie de société, 1989, estimation préliminaire pour 1990 et prévision pour 1991	46
Figure 9	Dépenses totales d'exploration de 1983 à 1989, estimation préliminaire pour 1990 et prévision pour 1991	47
Figure 10	Dépenses totales d'exploration de 1969 à 1989, répartition des dépenses entre les petites et les grandes sociétés; estimation préliminaire pour 1990 et prévision pour 1991	48
Figure 11	Dépenses d'exploration au Canada: répartition selon les produits de base, 1985 à 1989	50
Figure 12	Niveaux du financement par actions accréditives, 1983 à 1991	52

LISTE DES TABLEAUX

		Page
Tableau 1	Fonds réunis au moyen d'actions accréditives par les grandes sociétés en commandite de 1987 à 1990	2
Tableau 2	Comparaison des intentions, des dépenses préliminaires et des dépenses réelles d'exploration, 1984 à 1991	8
Tableau 3a	Dépenses d'exploration minière au Canada par province, de 1985 à 1991 (en millions de dollars courants)	41
Tableau 3b	Dépenses d'exploration minière au Canada par province, de 1985 à 1991 (en millions de dollars de 1990)	42
Tableau 4	Dépenses d'exploration minière au Canada par province, de 1985 à 1991 (répartition en pourcentage)	43
Tableau 5	Rapport entre le financement par actions accréditives et les dépenses totales d'exploration, 1983 à 1991	53

PARTIE A. SITUATION ACTUELLE DE L'EXPLORATION MINIÈRE ET DU FINANCEMENT PAR ACTIONS ACCRÉDITIVES AU CANADA

Le présent document expose la situation actuelle et l'évolution récente relative au financement par actions accréditives et à l'exploration minière

1. Perspectives du financement par actions accréditives en 1991

1.1 Introduction

La présente section traite des sommes réunies pour l'exploration grâce aux actions accréditives. Au cours des dernières années, les petites sociétés ont fait appel aux actions accréditives pour financer la majeure partie de leurs travaux d'exploration alors que, dans la plupart des cas, les grandes sociétés financent maintenant leurs programmes d'exploration par des moyens autres que les actions accréditives.

Le financement accréditif représente un indicateur important pour mesurer la place qu'occupent les petites sociétés dans l'ensemble des travaux d'exploration. Étant donné que la plupart des petites sociétés sont publiques et ont besoin de l'approbation des Bourses pour effectuer des placements, les renseignements portant sur leurs activités de financement ont été tirés principalement de publications relatives aux activités boursières ou d'informations obtenues directement auprès des Bourses.

1.2 Situation récente

La montée en flèche du financement par actions accréditives entre 1985 et 1988 n'aurait probablement pas été possible sans l'entrée en scène des grandes sociétés en commandite. Ces sociétés ont obtenu du succès en raison de l'étendue de leur réseau de distribution et de la diversification du risque. Le tableau 1 illustre la contribution impressionnante apportée par les grandes sociétés en commandite par rapport aux sommes totales réunies par d'actions accréditives entre 1987 et 1990.

Cependant, en 1991, les grandes sociétés en commandite se sont retirées du marché des actions accréditives. Au moment de la publication du rapport, aucune ne s'était encore lancée sur le marché accréditif en 1991.

Tableau 1. Fonds réunis au moyen d'actions accréditives par les grandes sociétés en commandite de 1987 à 1990

	Valeur des émissions vendues			
	1987	1988	1989a	1990a
	(en millions de dollars)			
TAP	28	23	0	0
CMP	239	234	113	89,4
NEF	-	8	0	0
MVP	57	26	0	0
NIM	260	270	49	0
FIRST EX	47	21	0	0
MIDDLEFIELD	29	5,5	5,5	10,9
MINTAX	15	3,5	0	0
Total	675	591	167,5	100,3

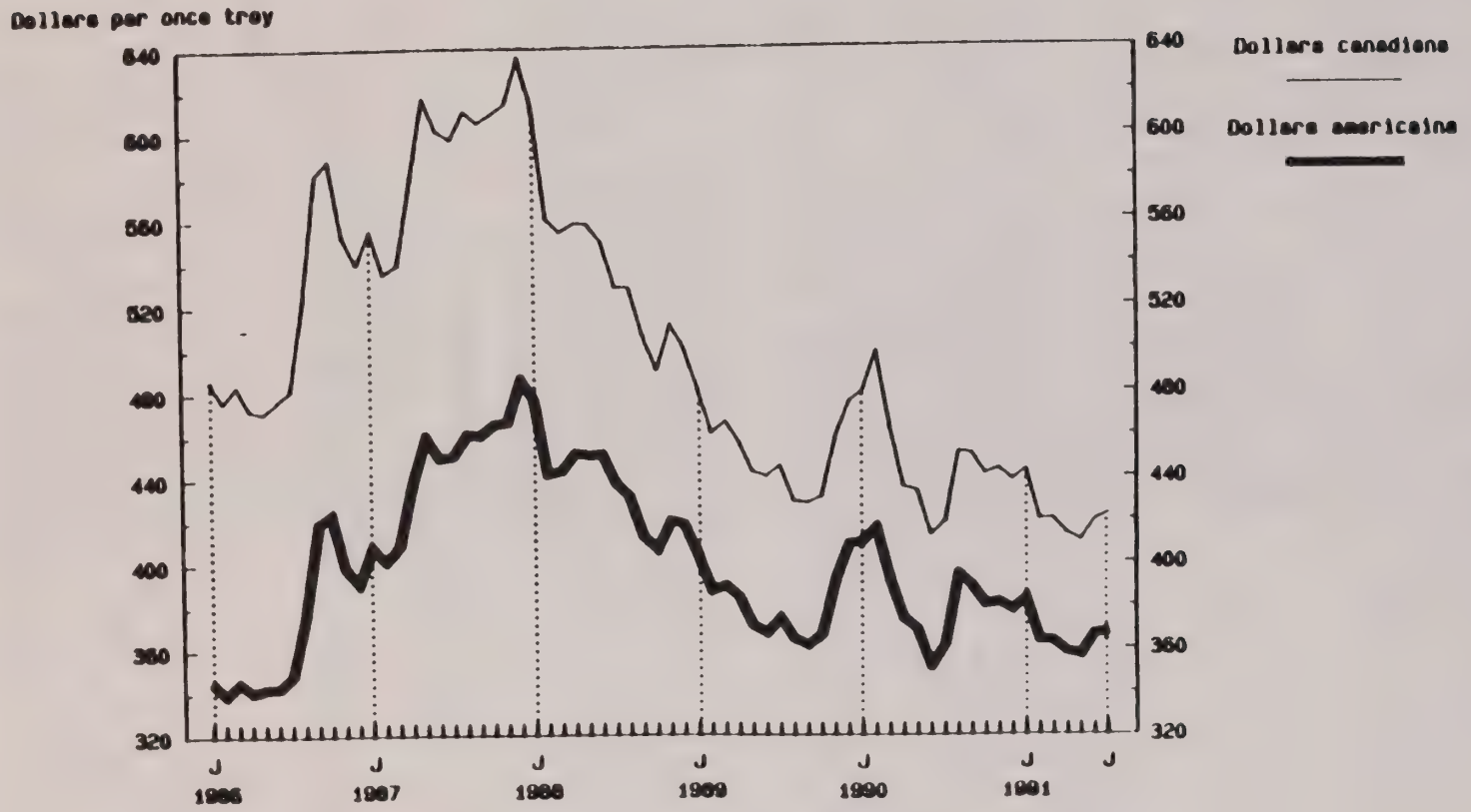
a Les chiffres de 1989 et 1990 ne représentent en général que les fonds destinés à l'exploration minière. Certaines sommes réunies pour la recherche de pétrole et de gaz sont cependant incluses dans les totaux de 1987 et 1988. Les chiffres de 1989 et 1990 comprennent la "majoration", par laquelle les sociétés conservent la subvention versée par le PSEMC et la dépensent par la suite.

1.3 Données sur les Bourses

Au cours du premier semestre de 1991, les investisseurs ont commencé à reprendre confiance dans les marchés boursiers et ont consacré des sommes assez considérables aux nouvelles émissions d'actions de bonne qualité. Il ne fait aucun doute que cette situation augure bien pour les grandes sociétés; cependant, cette bonne fortune ne s'est pas répercutée sur les petites sociétés.

Figure 1

PRIX MENSUEL MOYEN DE L'OR
JANVIER 1986 À JUILLET 1991



Sources: Metals Week et Handy & Harman.

Le marché boursier demeure léthargique pour les titres des petites sociétés. L'indice de la Bourse de Vancouver -- s'il est pris comme indicateur de l'intérêt des investisseurs à l'égard des actions des petites sociétés -- a culminé à 2 015 points en mai 1987, année même où le niveau de financement accréditif a atteint son sommet. Cet indice a reculé de 33 % depuis le milieu de 1990 et, en janvier 1991, est tombé sous la barre des 500 points pour la première fois depuis ses huit ans d'existence. Il s'agit d'un prolongement de la tendance à la baisse qui a suivi l'effondrement boursier de 1987. Le 1er juillet 1991, l'indice s'élevait à 580, une très légère remontée par rapport à son point le plus bas.

Les statistiques fournies par la Bourse de Vancouver montrent que quelque 7,3 millions de dollars ont été réunis grâce à 29 placements privés au cours des six premiers mois de 1991. De ces 7,3 millions, 800 000 dollars seront consacrés à la recherche de pétrole et de gaz, ce qui laisse 6,5 millions à l'exploration minière. Ceci représente une moyenne de 250 000 $ par semaine. Si cette tendance se poursuit, 13 millions de dollars seront réunis à la Bourse de Vancouver en 1991 pour le secteur minier.

Les données provenant de la Bourse de Montréal et de la Bourse de Toronto révèlent qu'exception faite des sommes réunies par des sociétés inscrites à plusieurs Bourses, quelque 4 millions de dollars ont été recueillis en actions accréditives à ces deux Bourses, dont 3,5 pour l'exploration minière. Si la tendance se poursuit, 7 millions de dollars seront réunis à la Bourse de Montréal et à la Bourse de Toronto en 1991.

1.4 Perspectives

Les divers montants de financement accréditif réunis pour l'exploration minière à ces trois Bourses s'élevaient à 10 millions de dollars au 1er juillet 1991. En supposant qu'un montant égal sera recueilli au cours du second semestre de 1991, nous arrivons à la conclusion qu'un financement total de 20 millions de dollars en actions accréditives sera disponible pour toute l'année.

Cependant, le recours traditionnel de fin d'année aux actions accréditives comme abri fiscal pourrait accroître le montant total de fonds à la disposition des petites sociétés. En fait, des annonces récentes révèlent que le financement accréditif en juillet s'est chiffré à plus de 3 millions. Même s'il est difficile

à ce moment-ci de prévoir le montant qui sera réuni pour l'ensemble de l'année, EMR est d'avis que 40 millions constituent une estimation raisonnable pour 1991, étant donné que les constatations des années passées démontrent que les fonds réunis au cours du second semestre sont beaucoup plus élevés qu'au cours du premier semestre.

2. Perspectives de l'exploration en 1991

2.1 Introduction

La présente partie traite du niveau prévu de l'ensemble de l'exploration minière plutôt que de son financement. Étant donné qu'il s'agit de projections, les sources statistiques courantes sont assorties d'autres sources. Tout d'abord, la présente partie fait état des résultats de l'«enquête sur les intentions» fédérale-provinciale pour 1991 coordonnée par Statistique Canada et EMR. Bien que ce soit le dernier sondage «complet» disponible, il comporte une grave lacune. Puisque ces intentions ont été rassemblées entre décembre 1990 et mars 1991, la valeur de cette enquête annuelle est quelque peu douteuse parce que plusieurs mois se sont déjà écoulés depuis.

Une autre source d'information provient d'un modèle économétrique mis au point par le Secteur de la politique minérale et servant à prévoir le montant total d'exploration et le montant d'exploration des grandes sociétés. Ce modèle repose sur l'importante relation statistique qui existe entre les travaux d'exploration et le prix des métaux.

Troisièmement, les niveaux récents de forage au diamant sont examinés dans le but de donner une idée de la tendance réelle des travaux d'exploration.

2.2 Enquête d'EMR et de Statistique Canada sur les intentions de dépenses d'exploration pour 1991

Méthode

Le 31 octobre 1990, Statistique Canada a envoyé 350 questionnaires aux sociétés minières productrices. EMR s'est chargé de la cueillette des données auprès des sociétés non productrices et a ainsi envoyé près de 3 300 questionnaires (avec le concours des provinces qui participent à cette enquête). Il convient de souligner que des sociétés ont pu recevoir plus d'un questionnaire si elles oeuvrent dans plus d'une

province. Le nombre de sociétés agissant comme exploitants réels de projets d'exploration au pays s'établirait plutôt à 900. Bon nombre d'associés de coentreprises fournissent des fonds, mais puisqu'ils ne sont pas exploitants de projet, ils ne signalent pas les sommes qu'ils entendent consacrer à l'exploration. Dans cette enquête, on demandait aux sociétés leurs prévisions de dépenses d'exploration pour l'exercice financier allant du 1er avril 1991 au 31 mars 1992.

Ces statistiques de dépenses d'exploration ont été compilées sous la classification «exploration générale» et «exploration à la mine». Les prévisions des dépenses d'exploration comprennent les dépenses pour travaux physiques et levés sur le terrain, les dépenses foncières connexes, les frais généraux reliés aux travaux sur le terrain, et les dépenses du siège social imputables aux travaux d'exploration.

Résultats

Statistique Canada a publié les résultats sous la rubrique «exploration sur la propriété (à la mine)» dans sa publication annuelle intitulée *Dépenses d'exploration, de développement et d'immobilisations pour les mines et les puits de pétrole et de gaz naturel - Perspective 1991* (n° 61-216 au catalogue de Statistique Canada). Au total, les dépenses d'exploration à la mine pour 1991 s'élèvent à 88 millions de dollars. Ce chiffre a été révisé à la hausse par EMR à 98 millions à la suite d'informations plus récentes.

EMR publiera les résultats de cette enquête dans l'édition de septembre 1991 de son *Rapport mensuel sur l'industrie minérale au Canada*. Les premières indications laissent croire que l'exploration de nature générale («hors chantier») totaliserait 548 millions de dollars.

Par conséquent, d'après les intentions exprimées par les sociétés entre décembre 1990 et mars 1991, les dépenses totales d'exploration (tant au chantier qu'hors chantier) pourraient s'établir à environ 646 millions de dollars (soit 548 millions plus 98 millions).

Interprétation

Les enquêtes des intentions de Statistique Canada et d'EMR donnent une idée des sommes totales que l'industrie entendait consacrer, à la fin de 1990, à

l'exploration en 1991. Cependant, vu que les intentions exprimées à la fin de 1990 ont pu être modifiées par des événements limitant la disponibilité des fonds, tels la situation boursière, les fluctuations du prix des métaux et par d'autres facteurs économiques propres à une société ou d'ordre général tels la récession qui sévit, il se peut bien que les résultats de cette enquête ne puissent plus être interprétés comme des prévisions réalistes des travaux d'exploration qui seront effectivement exécutés en 1991.

Au tableau 2 figurent les intentions ainsi que les dépenses préliminaires et les dépenses réelles pour les travaux d'exploration à la mine et d'exploration générale de 1984 à 1991. Ce tableau montre qu'entre 1985 et 1988 les dépenses totales initialement déclarées préliminaires et par après réelles ont en général dépassé les intentions pour la même période. Cependant, la tendance s'est renversée en 1989. Cette situation pourrait être attribuable au fait qu'entre 1985 et 1988 le financement des travaux d'exploration devenait plus abondant que les sociétés ne l'avaient prévu à l'origine, mais 1989 a marqué un recul de la disponibilité du financement accréditif que les sociétés n'avaient pas non plus prévu. Ainsi, les dépenses réelles d'exploration en 1991 pourraient être inférieures aux données sur les intentions de 1991.

Tableau 2. Comparaison des intentions, des dépenses préliminaires et des dépenses réelles d'exploration, 1984 à 1991

	Intentions	Préliminaires	Réelles
	(en millions de dollars)		
1984			
Exploration à la mine		158,6	136,4
Exploration générale		389,7	480,9
Exploration totale	nd	548,3	617,3
1985			
Exploration à la mine	150,9	89,4	100,1
Exploration générale	361,2	471,5	488,8
Exploration totale	512,1	560,9	588,9
1986			
Exploration à la mine	87,5	110,2	108,6
Exploration générale	431,2	483,6	589,3
Exploration totale	518,7	593,8	697,9
1987			
Exploration à la mine	122,6	121,5	161,0
Exploration générale	583,2	849,6	1 139,0
Exploration totale	705,8	971,1	1 300,0
1988			
Exploration à la mine	154,7	138,7	143,0
Exploration générale	891,0	1 107,9	1 207,0
Exploration totale	1 045,7	1 246,6	1 350,0
1989			
Exploration à la mine	111,7	160,0	115,3
Exploration générale	832,2	766,7	712,5
Exploration totale	943,9	926,7	827,8
1990			
Exploration à la mine	150,0	107,7	
Exploration générale	633,0	643,5	
Exploration totale	783,0	751,2	nd
1991			
Exploration à la mine	97,9		
Exploration générale	548,3		
Exploration totale	646,2	nd	nd

Source: Statistique Canada et enquête fédérale-provinciale des sociétés d'exploitation et d'exploration. L'enquête sur les dépenses réelles de 1990 est en cours, les enquêtes sur les dépenses préliminaires et réelles pour 1991 ne seront pas envoyées avant la fin de 1991 et le début de 1992.
nd: non disponible

2.3 Dépenses d'exploration des grandes sociétés en 1990 et 1991

Méthode

Les renseignements sur les dépenses d'exploration par catégorie de sociétés (réelles pour 1989, préliminaires pour 1990 et intentions pour 1991) sont maintenant tirées de l'enquête fédérale-provinciale des dépenses préliminaires et prévisionnelles d'exploration. Environ 224 grandes sociétés actives en 1990 et 195 en 1991 ont signalé des dépenses d'exploration. Sont compris dans ce chiffre relatif aux grandes sociétés les producteurs et leurs sociétés affiliées ainsi que des sociétés étrangères et pétrolières. Dans le cas d'une coentreprise, les dépenses totales de projet ne sont signalées que par l'exploitant. Ainsi la participation des grandes sociétés a parfois été surestimée. Malgré tout, l'analyse des données a été constante au cours des ans et une tendance claire s'en dégage.

Résultats

Selon l'enquête fédérale-provinciale, la baisse du niveau des dépenses effectuées par les grandes sociétés a été importante de 1988 à 1989, soit de 22 %, passant de 708 millions à 555 millions. Cette baisse se poursuivra vraisemblablement, mais à un rythme plus lent. L'estimation préliminaire de 1990 (502 millions) représente un recul de 10 % par rapport à 1989, et les intentions pour 1991 (462 millions) une baisse de 8 % par rapport aux dépenses de 1990. Les grandes sociétés ont effectué 52 % du total des dépenses d'exploration en 1988, 67 % en 1989 et 1990, et elles devraient se partager 72 % du total en 1991.

Les intentions totales pour 1991 se chiffrant à 646 millions et celles des grandes sociétés à 462 millions, il en résulte que les intentions des petites sociétés pour 1991 s'élèvent à 184 millions. Cependant, les niveaux des dépenses d'exploration de ces dernières sont déterminées beaucoup plus par la disponibilité des fonds que par les intentions des sociétés.

2.4 Perspectives d'exploration d'après le prix des métaux

Méthode

Une analyse rétrospective des données révèle que le niveau des dépenses d'exploration minière effectuées au cours d'une année donnée peut être relié aux prix des métaux de l'année précédente. Cette constatation pourrait s'expliquer par le fait que les sociétés qui financent les travaux d'exploration traitent l'exploration comme tout autre investissement dont le rendement escompté dépend des revenus anticipés de l'exploitation subséquente des gisements découverts. Il semble également que les prix actuels occupent une place de premier plan dans l'esprit des investisseurs lorsqu'ils tentent de prévoir l'évolution future des prix. En outre, les prix contribuent à déterminer la marge brute d'autofinancement et, par conséquent, les fonds disponibles pour l'exploration.

Les variations des dépenses d'exploration tendent à suivre les fluctuations des prix, car les travaux d'exploration exécutés au cours d'une année font suite à un processus de budgétisation qui a lieu au cours de l'année précédente. Les affectations de fonds tendent par conséquent à refléter le prix des métaux en vigueur pendant l'année précédente.

La figure 2 montre le lien entre les dépenses d'exploration et l'indice des prix annuels des métaux d'EMR, décalés d'une année. Il s'agit d'un indice composé des prix de six métaux: l'or, l'argent, le cuivre, le zinc, le plomb et le nickel.

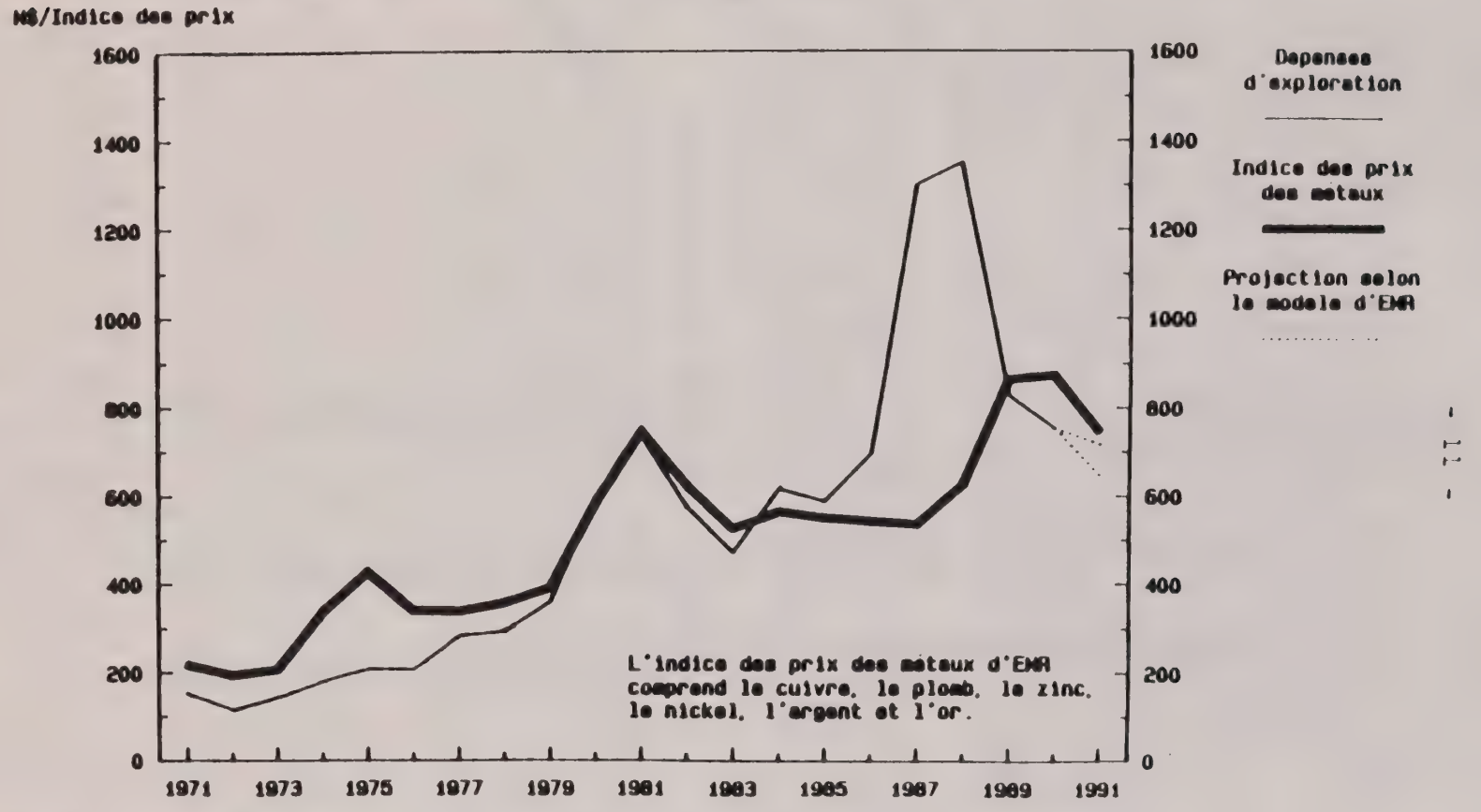
En raison sans aucun doute du recours considérablement accru aux actions accréditives par les petites sociétés minières entre 1986 et 1988, la corrélation entre les dépenses totales d'exploration et les prix des métaux s'est atténuée au cours de cette période.

Résultats

Compte tenu du rapport entre l'exploration minière et les prix des métaux observé entre 1971 et 1990, les dépenses totales d'exploration pourraient s'élever au maximum en 1991 à près de 717 millions de dollars (voir la figure 2). De plus, il est estimé que les grandes sociétés pourraient consacrer jusqu'à 532 millions à l'exploration en 1991 (voir la figure 3).

Figure 2

DÉPENSES TOTALES D'EXPLORATION ET PRIX DES MÉTAUX CANADIENS DÉCALÉS D'UNE ANNÉE

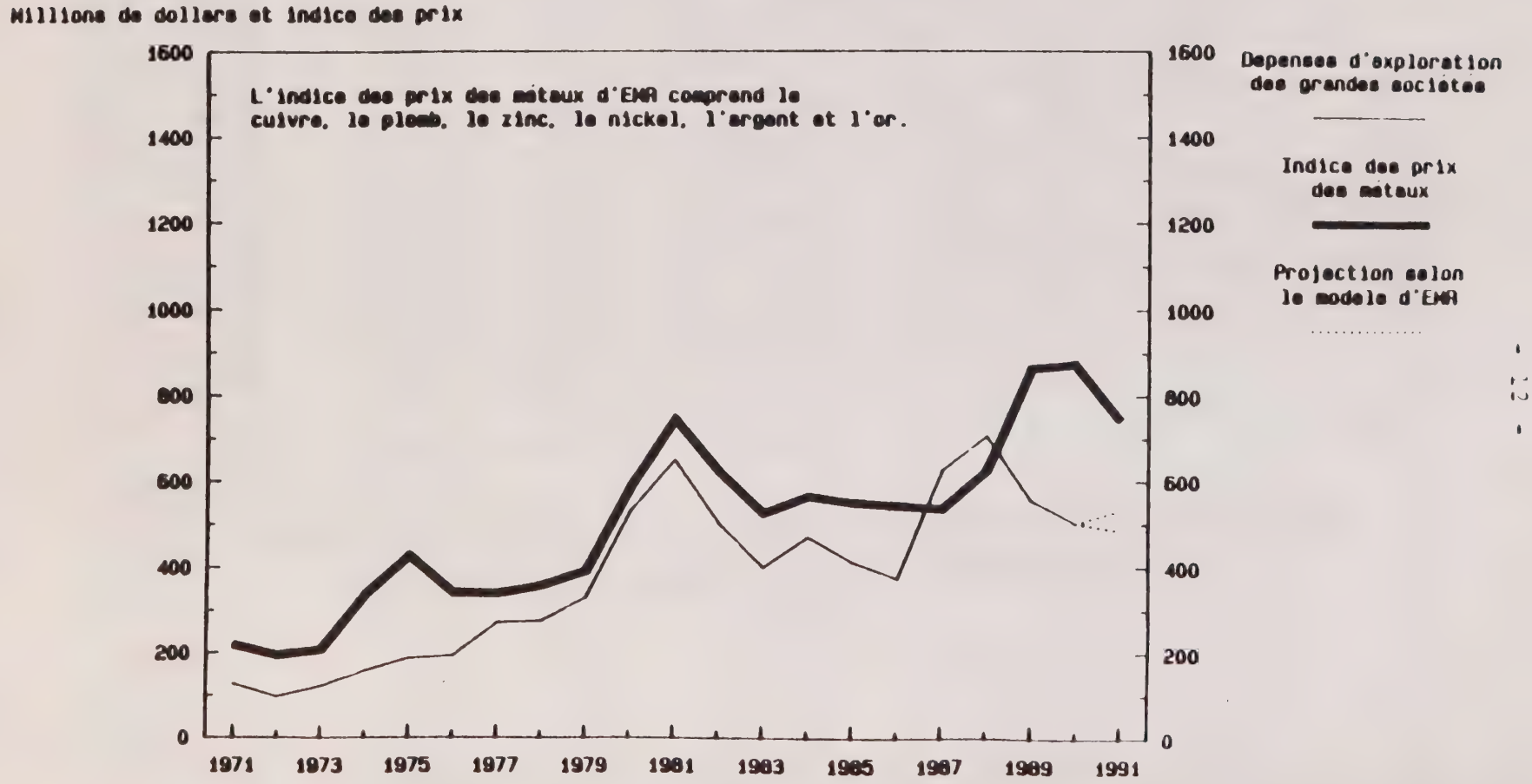


Sources: publications nos 61-007 et 61-216 au catalogue de Statistique Canada pour les données sur l'exploration entre 1971 et 1985; pour les années 1986 à 1988 les totaux avec frais généraux ont été obtenus en multipliant les dépenses sur le terrain de l'enquête fédérale-provinciale par le rapport total/dépenses sur le terrain de Statistique Canada; l'estimation préliminaire pour 1990 est fondée sur les enquêtes fédérales-provinciales coordonnées par Statistique Canada et EMR; la projection pour 1991 provient du modèle d'EMR.

Les dépenses sont exprimées en dollars courants et comprennent les frais généraux

Figure 3

DÉPENSES D'EXPLORATION DES GRANDES SOCIÉTÉS ET PRIX DES MÉTAUX CANADIENS DÉCALÉS D'UNE ANNÉE



Source: Les dépenses des grandes sociétés ont été évaluées par EMR de 1971 à 1988; les résultats de 1989 et l'estimation préliminaire pour 1990 sont fondés sur les enquêtes fédérales-provinciales coordonnées par [illegible] et EMR; la projection pour 1991 provient du modèle d'EMR.

Les dépenses sont exprimées en dollars courants et comprennent les frais généraux.

Même si le modèle utilise les prix annuels moyens des métaux pour prévoir les dépenses d'exploration, il est probable qu'une variation importante des prix au cours du second semestre d'une année ne serait pas entièrement détectée par la moyenne annuelle. S'il est vrai que les budgets d'exploration sont établis vers la fin de l'année, la baisse des prix enregistrée au dernier trimestre de 1990 (et qui se poursuit en 1991) peut avoir influé sur les intentions des dépenses d'exploration pour 1991, sans que cet effet en soit décelé par le modèle. Pour cette raison, le modèle s'est servi des prix moyens des métaux en 1990 selon les prix à la fin de l'année, ce qui a conduit à une estimation d'environ 485 millions pour les grandes sociétés et environ 645 millions pour l'ensemble de l'exploration pour 1991.

Même s'il découle de l'écart entre ces deux chiffres que les petites sociétés dépenseraient 160 millions, nous n'avons pas tenté de prévoir les dépenses d'exploration des petites sociétés à l'aide de cette méthode, car dans ce secteur les dépenses sont définies largement par la disponibilité des fonds sur les marchés boursiers.

2.5 Travaux récents de forage au diamant

Un autre indicateur de l'évolution des niveaux d'exploration nous est donné par l'analyse des données sur le forage au diamant. L'Association canadienne de forage au diamant (ACFD) recueille tous les mois les données fournies par ses sociétés membres. Les statistiques disponibles de l'ACFD touchent environ de 50 à 60 % de tous les travaux de forage au diamant à façon au Canada et sont habituellement disponibles de un à trois mois après la fin du mois.

Par opposition, en raison des retards mis par de nombreuses sociétés à répondre, les statistiques annuelles sur les dépenses d'exploration provenant de l'enquête fédérale-provinciale sur l'exploration ne sont normalement pas disponibles avant environ un an après l'année d'exploration. Par conséquent, il s'agit de dépenses et travaux d'exploration qui ont été effectués au cours des 12 à 24 mois précédents.

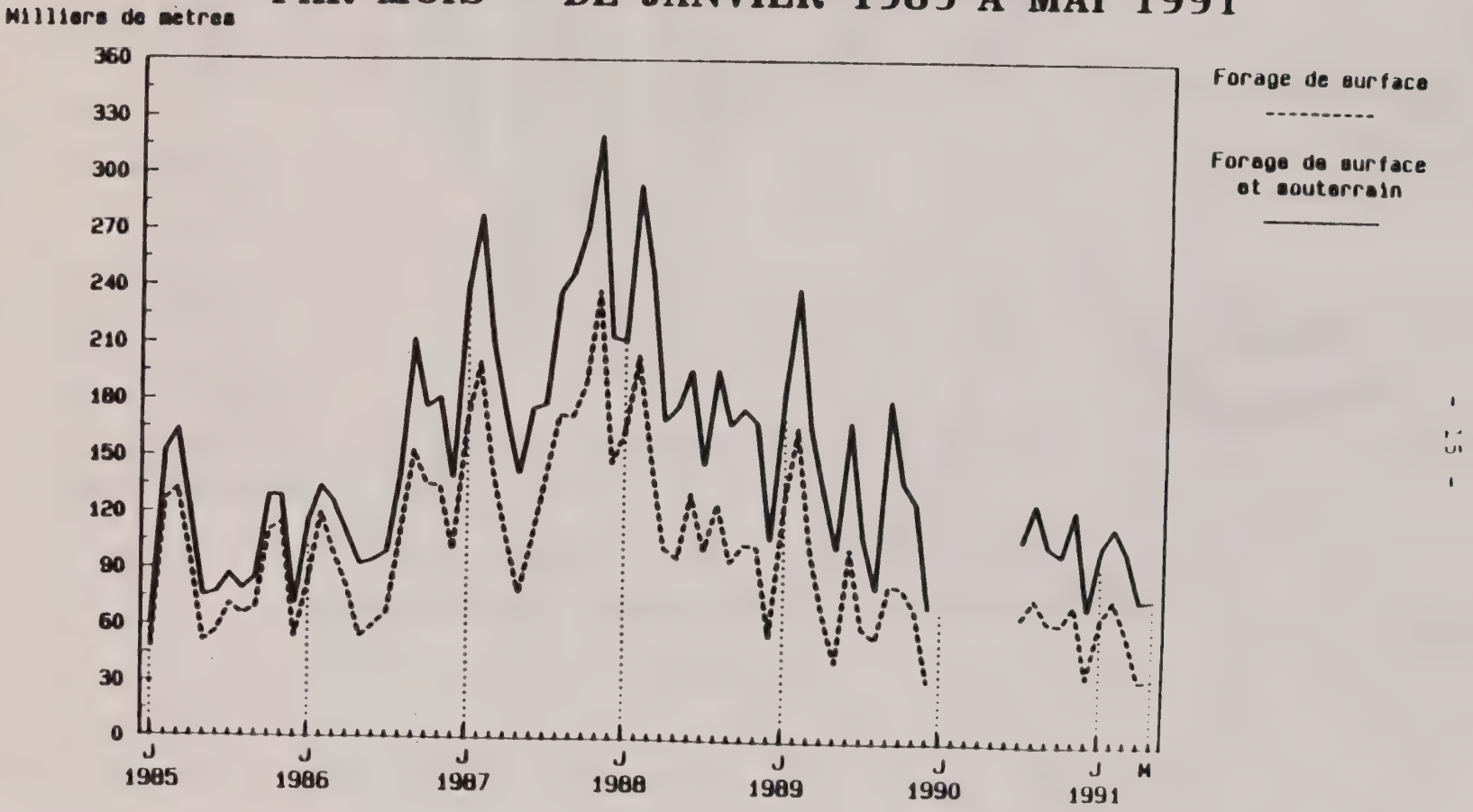
Au cours des 10 à 15 dernières années, on remarque une corrélation assez étroite entre le métrage annuel signalé par l'ACFD et les dépenses d'exploration au pays. Ainsi, les statistiques de forage figurant à la figure 4 (par mois, de 1985 à 1991), la figure 5 (par trimestre, de 1985 à 1991) et la figure 6 (par année,

de 1973 à 1990) devraient donner une idée assez claire et à jour de l'évolution récente des travaux d'exploration minière au pays. En outre, un graphique complet (figure 7) montre sur 17 années l'évolution du forage total à façon jusqu'en 1989, tel que signalé annuellement à EMR par les foreurs au diamant et publié au n° 26-201 du catalogue de Statistique Canada. Même si ces deux sources arrivent à des résultats annuels différents, la même tendance globale peut être observée en dépit du fait que les statistiques de l'ACFD sont incomplètes parce que tous les foreurs au diamant au Canada ne sont pas membres de l'ACFD et que les sociétés membres ne signalent pas toutes leurs travaux de forage à l'ACFD.

Comme le montre la figure 5, les trois dernières années (1988, 1989 et 1990) accusent la même baisse d'intensité des travaux au cours de l'année, le premier trimestre de 1988, 1989 et 1990 affichant une hausse par rapport au dernier trimestre de l'année précédente. Les travaux ont toujours culminé au premier trimestre parce que les fonds accréditifs de l'année précédente étaient reportés en janvier et février de l'année suivante et qu'une bonne partie du forage doit être effectuée pendant les mois d'hiver sur la glace des lacs et des zones de muskeg, qui sont généralement inaccessibles au forage pendant le reste de l'année. La tendance générale à la baisse ressentie tout au long de 1988, 1989, 1990 et 1991 fait contraste à la situation de 1986 et 1987, où les niveaux de forage au diamant au second semestre étaient supérieurs à ceux du premier en raison de la disponibilité accrue du financement accréditif. La baisse au deuxième semestre de 1988 confirme la perception générale que les travaux d'exploration ont commencé à ralentir en 1988 après avoir atteint un sommet à la fin de 1987 et au début de 1988. La baisse des travaux de forage au cours des deux derniers trimestres de 1988 traduit l'effet de la diminution du financement accréditif disponible aux petites sociétés dont les travaux d'exploration sont davantage fonction des actions accréditives que du prix des métaux. Pendant le second semestre de 1988, le marché des actions accréditives a manifesté des signes d'essoufflement en raison de la baisse du prix de l'or, et le cours des actions des petites sociétés a continué de se détériorer. Malgré ce ralentissement dans les travaux de forage, les dépenses totales d'exploration se sont chiffrées en 1988 à 1,35 milliard, ce qui représente un niveau très élevé par rapport aux années antérieures.

Figure 4

FORAGE DE SURFACE ET SOUTERRAIN PAR MOIS – DE JANVIER 1985 À MAI 1991

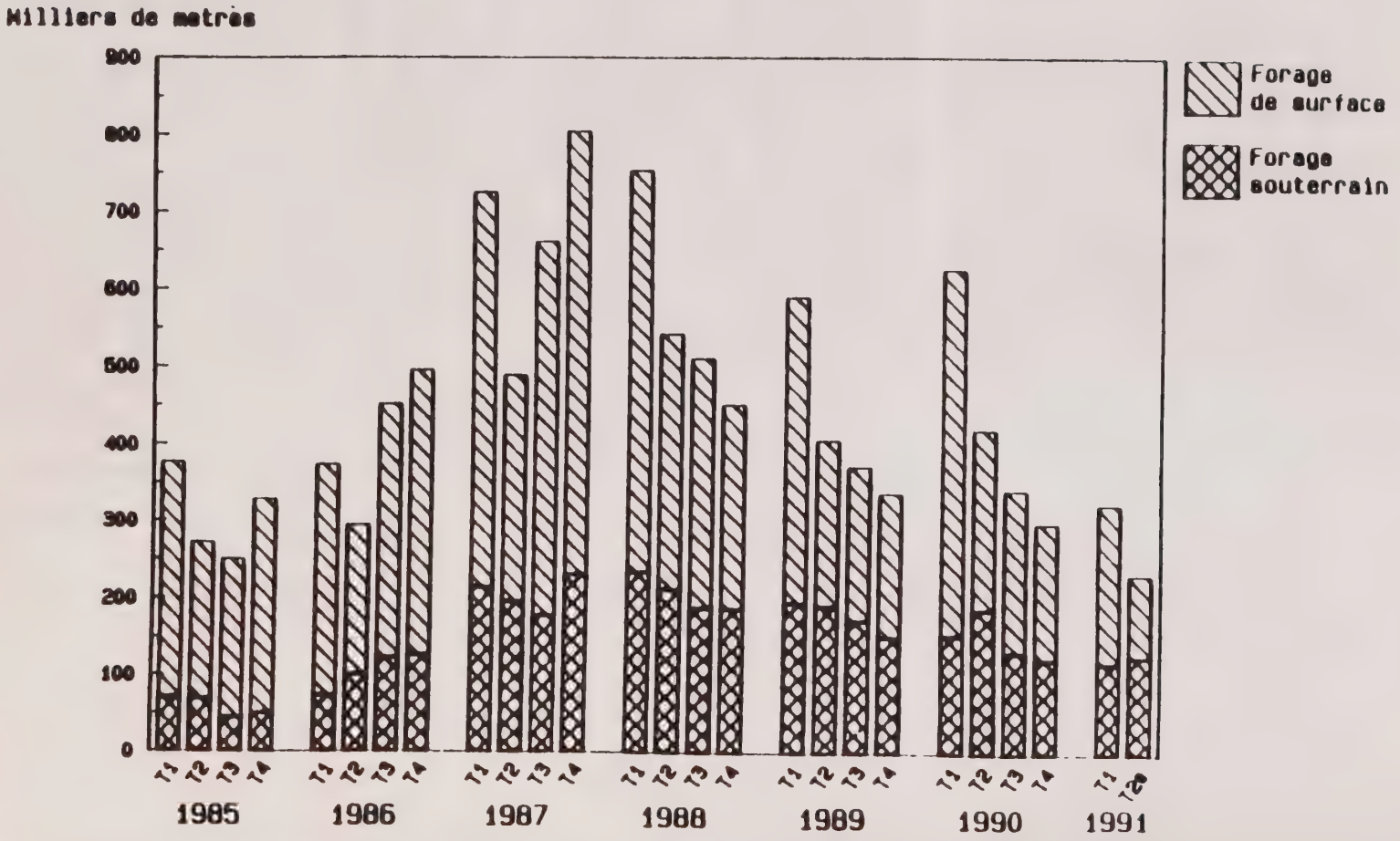


Source: Association canadienne de forage au diamant (ACFD).

Nota: Ces données englobent environ de 50 à 60 % des travaux totaux de forage. Les données mensuelles ne sont pas disponibles pour la période allant de janvier à juin 1990; les statistiques de l'ACFD, pour ces six mois, sont eulement

Figure 5

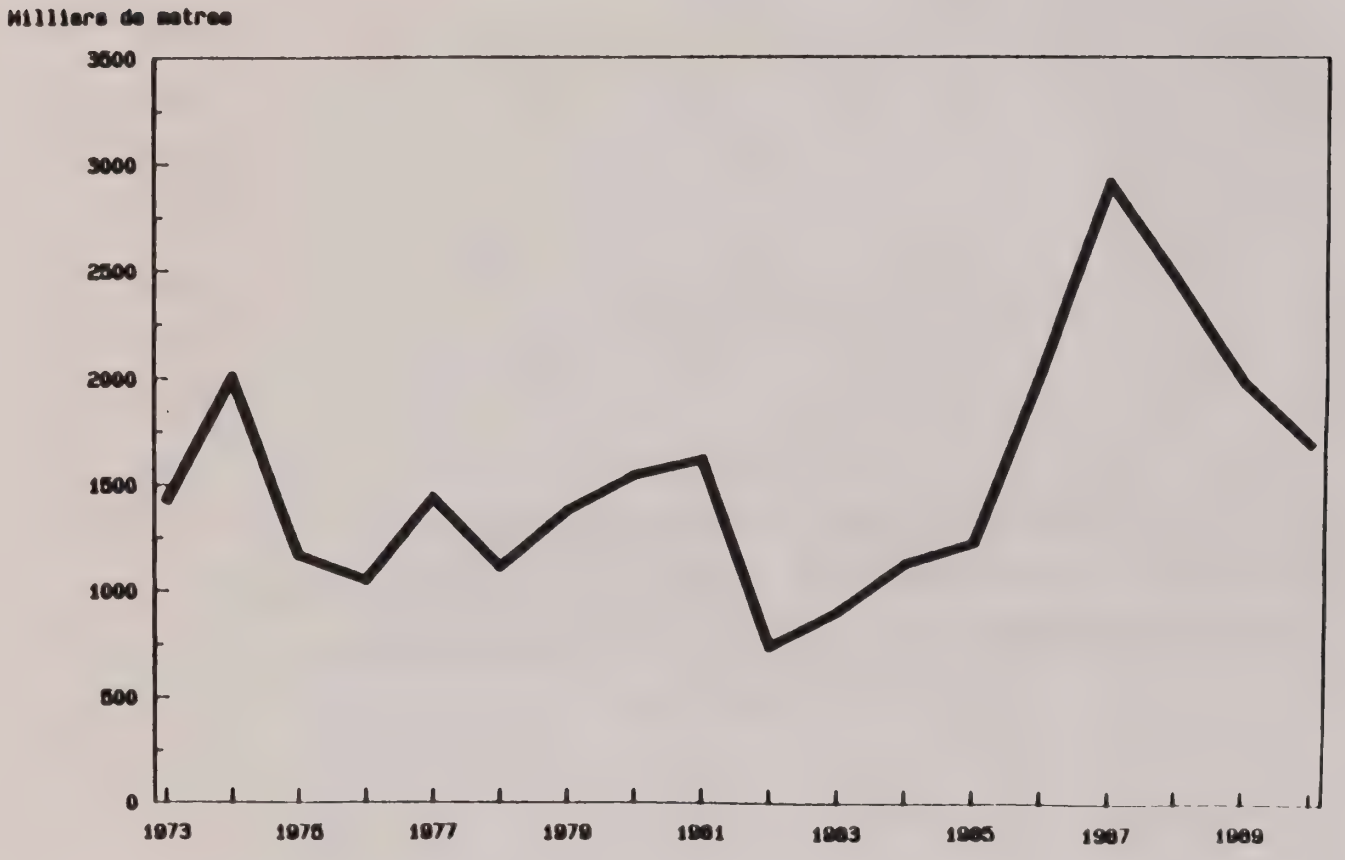
FORAGE DE SURFACE ET SOUTERRAIN PAR TRIMESTRE – 1985 À 1991



Source: Association canadienne de forage au diamant (ACFD).
Note: Ces données, fournies par les entrepreneurs de l'ACFD, englobent environ de 50 à 60 % des travaux totaux de forage [illegible] estimation.

Figure 6

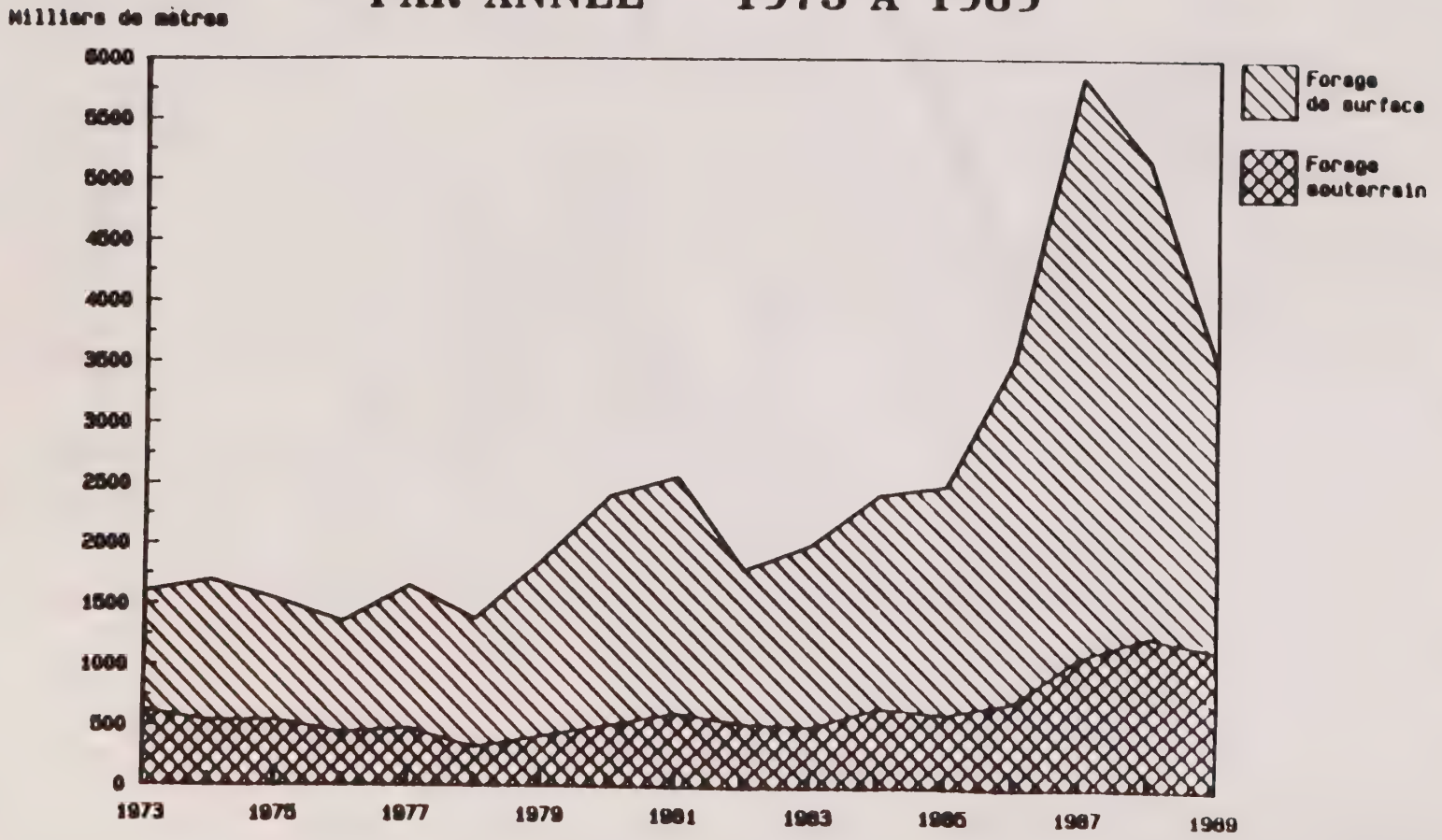
FORAGE DE SURFACE ET SOUTERRAIN PAR ANNÉE – 1973 À 1990



Source: Association canadienne de forage au diamant (ACFD).
Note: Ces données englobent environ de 50 à 60 % des travaux totaux de forage.

Figure 7

FORAGE DE SURFACE ET SOUTERRAIN
TRAVAUX DE FORAGE AU DIAMANT À FAÇON
PAR ANNÉE – 1973 À 1989



Source: Publication no 26-201 au catalogue de Statistique Canada.
Note: Les données réfèrent au code CTI 0921. 1989 est la dernière année pour laquelle les données sont disponibles.

Les travaux de forage ont poursuivi leur chute au second trimestre de 1991, en grande partie parce que les petites sociétés ont éprouvé de plus en plus de difficultés à réunir des fonds par la vente d'actions, accréditives ou autres.

Les graphiques illustrant la tendance sur 18 (1973 à 1990) et 17 années (1973 à 1989) (figures 6 et 7) ainsi que les données des années précédentes sur l'exploration au Canada montrent très clairement que 1987 et 1988 ont été des années record au chapitre du forage au diamant. Les niveaux de 1989 et de 1990 étaient encore élevés par rapport à celui de 1981, sommet antérieur avant la montée en flèche du marché accréditif. Cependant, le nombre de mètres forés semble avoir diminué considérablement en 1991.

Le forage au diamant en surface a varié beaucoup plus que le forage souterrain (voir les figures 4, 5 et 7). On pourrait en déduire qu'une grande partie du forage souterrain consiste en des travaux à façon visant à définir de nouvelles réserves de minerai aux mines productrices. Dans la cueillette des statistiques sur les dépenses d'exploration, les dépenses de cette nature sont classées comme des «dépenses de mise en valeur» plutôt que des «dépenses d'exploration». Ainsi, une bonne part du forage souterrain au diamant ne représente pas du «forage d'exploration», c'est-à-dire axé sur la recherche de nouveaux gisements. Cependant, la hausse des travaux de forage souterrain au diamant qui s'est produite au cours de la deuxième moitié des années 80 est attribuable à la recherche de gisements d'or se trouvant à l'étape de l'exploration, soit des mines non productrices ou pour lesquelles aucune décision d'entrée en production n'avait été prise. Cependant, en interprétant les figures 4 à 7, malgré la corrélation assez étroite des dépenses d'exploration et du métrage de forage au diamant à façon qui s'est généralement appliquée à la période débutant vers 1975, il est important de tenir compte du fait que les niveaux récents de travaux de forage au diamant ne donnent qu'une idée approximative des niveaux récents d'exploration au Canada et qu'en raison de l'inclusion du forage souterrain aux mines productrices, les figures 4, 5 et 7 peuvent en réalité gonfler les niveaux récents d'exploration minière.

3. Vue d'ensemble de l'exploration minière en 1991

La présente section reprend les renseignements discutés ci-dessus.

En 1990, les dépenses totales d'exploration se sont élevées à environ 751 millions de dollars, les grandes sociétés se partageant environ 502 millions et les petites sociétés, environ 249 millions. Ce montant préliminaire est de beaucoup inférieur au 1,35 milliard enregistré en 1988 et un peu plus bas que les 828 millions dépensés en 1989.

Pour établir une prévision globale pour 1991, il est nécessaire de concilier des montants provenant de diverses sources. L'enquête sur les intentions en matière d'exploration prévoit des dépenses de l'ordre de 646 millions en 1990. Comme il en a été question ci-haut, ce chiffre comprend 462 millions pour les grandes sociétés et 184 millions pour les petites.

L'analyse de régression fournit une autre source d'information. La relation qui existe entre les dépenses totales d'exploration et les prix des métaux permet d'établir le niveau global d'exploration à 717 millions, ou un peu moins, soit une estimation raisonnable d'après les prix annuels moyens des métaux en 1990. En utilisant les prix moyens des métaux qui ont eu cours vers la fin de 1990, la même analyse de régression donne une estimation de 645 millions, soit un montant étonnamment près de l'estimation de 646 millions découlant de l'enquête sur les intentions, dont 485 millions pour les grandes sociétés, ce qui laisse entrevoir 160 millions pour les petites sociétés.

Une autre façon d'estimer les dépenses totales d'exploration pour 1991 consiste à additionner le financement par actions ordinaires des petites sociétés (y compris les actions accréditives) et les intentions des grandes sociétés. Cet exercice repose donc sur les tendances de financement en 1991. L'enquête sur les intentions, effectuée à la fin de 1990, révèle que les dépenses d'exploration des grandes sociétés s'élèveraient à 462 millions, alors que l'analyse de régression donne un chiffre de 485 millions d'après les prix moyens des métaux à la fin de 1990. On pourrait soutenir que ces niveaux de dépenses seront fort probablement atteints parce que les grandes sociétés sont plus certaines de leurs sources de financement que les petites. Tenant compte du fait que les grandes sociétés déclarent les dépenses de leurs associés lorsqu'elles sont exploitants de projet et qu'il n'est pas possible de déterminer avec précision la réduction nécessaire pour éviter un double comptage, les dépenses des grandes sociétés ont été arbitrairement ramenées à 450 millions.

Le niveau de dépenses des petites sociétés est plus difficile à cerner étant donné qu'il dépend en grande partie de la disponibilité de fonds et, au cours des dernières années, surtout des actions accréditives. Comme nous l'avons vu à la section A, les petites sociétés pourraient probablement réunir environ 40 millions sous forme d'actions accréditives en 1991. Si ce montant s'avère exact, il resterait donc à rassembler quelque 140 millions de financement non accréditif si les intentions d'exploration (quelque 180 millions) des petites sociétés devaient se réaliser conformément à l'enquête fédérale-provinciale. EMR ne peut souscrire à ce niveau de dépenses d'exploration de la part des petites sociétés en 1991 parce que les renseignements obtenus jusqu'ici ne permettent pas de croire qu'elles obtiendront le financement requis pour de tels niveaux de dépenses. Une étude détaillée des intentions des petites sociétés provenant de la liste de l'enquête fédérale-provinciale et une comparaison des financements non accréditifs signalés dans les médias et recueillis dans d'autres sources d'information révèlent qu'une somme de 40 millions pourrait être réunie de façon assez certaine. Quant aux autres 100 millions d'intentions, EMR est d'avis que peut-être seulement 50 % au maximum pourraient être réunis, soit 50 millions. En additionnant ces chiffres (40 millions en financement accréditif éventuel, 40 millions de financement non accréditif probable et 50 autres millions possibles en financement non accréditif), on obtient une fourchette allant de 80 à 130 millions de dollars pour les petites sociétés.

En se fondant sur la prévision susmentionnée concernant les dépenses des petites sociétés et l'estimation de 450 millions pour les grandes sociétés, EMR attache plus de crédibilité à un total de dépenses d'exploration de l'ordre de 530 à 580 millions qu'aux niveaux prévus par le modèle de régression ou l'enquête fédérale-provinciale.

PARTIE B. SITUATION RÉGIONALE

4.1 Introduction

La présente partie donne les observations des représentants provinciaux et territoriaux au sujet des récents travaux d'exploration ainsi que leurs perspectives pour 1991.

Dans l'ensemble, les provinces et territoires indiquent que l'exploration préliminaire est à la baisse et que l'exploration est davantage axée sur les projets avancés. Ils ajoutent que les activités des petites sociétés sont peu nombreuses et que l'exploration est principalement planifiée et effectuée par les grandes sociétés ou par des petites sociétés qui ont reçu des fonds des grandes. Les efforts d'exploration sont moins centrés sur les métaux précieux et davantage sur les minéraux polymétalliques et industriels. Compte tenu de la conjoncture des marchés financiers, certaines provinces ont annoncé la mise en oeuvre ou l'amélioration de l'assistance financière aux petites sociétés d'exploration minière en 1990 et 1991.

4.2 Terre-Neuve et le Labrador

En 1990, les travaux d'exploration minière à Terre-Neuve ont connu une baisse par rapport aux niveaux records établis en 1988 et 1989.

En 1990, les grands efforts d'exploration ont été déployés vers les métaux communs et l'or, les minéraux industriels suscitant un intérêt faible mais grandissant. Les dépenses d'exploration pendant cette année ont été consacrées principalement aux projets d'exploration avancés. Ces programmes ont été orchestrés par les grandes sociétés, le secteur des petites sociétés n'effectuant qu'une faible partie des travaux d'exploration.

Statistiques sur les claims jalonnés

Il semblerait que l'augmentation progressive du nombre de claims en règle de 1983 à 1989 ait atteint un sommet. En 1990, il y a eu une chute d'environ 20 000 claims. Cette tendance semble se poursuivre en 1991, les statistiques du premier semestre révélant le jalonnement de 3 350 et l'existence de 39 260 claims en règle.

Forage au diamant

Le forage au diamant est peut-être la principale activité qui fait partie et montre l'importance de l'exploration. Le niveau d'activité enregistré en 1988 à Terre-Neuve et au Labrador découle de la conjonction de facteurs, les capitaux d'exploration réunis grâce aux stimulants fiscaux accordés aux actions accréditives n'étant pas le moindre. Le forage au diamant en 1989 et 1990 a connu une baisse considérable par rapport aux 234 000 mètres forés en 1988 mais se situe quand même à un niveau très respectable. Pour 1991, on prévoit 25 000 mètres (± 5 000 mètres). Cette importante baisse n'augure pas bien pour la découverte possible de nouveaux gisements.

Dépenses d'exploration

La valeur totale de l'exploration en 1990 représente une baisse de 50 pour cent par rapport à 1988. Les prévisions pour 1991 révèlent que cette tendance se poursuivra. Les travaux sont maintenant axés sur les projets plus avancés, et une réduction considérable du niveau de l'exploration préliminaire se fait sentir.

Sommaire

L'année 1991 s'annonce mauvaise et alarmante pour l'exploration minière à Terre-Neuve et au Labrador. Tous les principaux indicateurs de l'exploration - claims jalonnés, claims en règle, forage au diamant et dépenses d'exploration - accusent un recul sensible par rapport aux années précédentes. Il est peu probable que cette situation pourrait se renverser. Cependant, la province compte un certain nombre de cibles prometteuses qui continuent à être explorées par des grandes sociétés.

Statistiques sur l'exploration à Terre-Neuve et au Labrador

	1988	1989	1990pr	1991p
Dépenses annuelles d'exploration ($)	41 155 481	36 252 686	23 617 000	13 000 000
Jalonnement de claims				
claims jalonnés	26 199	17 190	10 508	6 000
en règle	65 822	63 596	44 833	26 000
Dépenses d'exploration sur le terrain				
MC-MP	17 559 585	10 970 673	10 019 723	nd
or	18 698 498	14 895 933	7 054 863	nd
autres	457 370	1 364 328	2 245 051	nd
Forage au diamant (mètres)				
Production/ développement	17 449	16 355	8 884	nd
Exploration	217 382	106 497	84 462	nd
Total	234 831	122 852	93 346	25 000

Source: Ministère des Mines et de l'Énergie (28/06/90)
MC: métaux communs; MP: métaux précieux; p: prévision;
pr: préliminaire; nd: non disponible

4.3 Nouvelle-Écosse

En 1990, les travaux d'exploration se sont poursuivis à un rythme modéré. Certaines grandes sociétés ont manifesté un regain d'intérêt à l'égard des cibles de minéraux polymétalliques et de métaux communs. Les minéraux industriels et le charbon se sont maintenus, apportant leur contribution habituelle à l'activité globale. Les petites sociétés n'ont pas été aussi actives que par les années passées, principalement en raison du déclin de l'intérêt des investisseurs envers l'or. La plupart des grands programmes d'exploration souterraine et en surface, entrepris en 1987 et 1988, ont été suspendus. En général, les investissements dans l'exploration et la mise en valeur de mines sont à la baisse depuis 1988. Cette tendance est attribuable à l'abolition des programmes d'encouragement fiscal, de la faiblesse des prix des métaux et de la difficulté de réunir des capitaux à risque élevé. Les indicateurs de l'exploration pour la période allant de 1980 à 1990 figurent au tableau ci-contre.

Le nombre de claims jalonnés en 1990 (10 910) est légèrement inférieur au niveau de 1989. Le nombre total de claims à la fin de l'année, soit 28 641, a aussi diminué, révélant l'abandon d'un nombre assez important de claims.

Les dépenses totales estimées pour tous les travaux d'exploration en 1990 s'élèvent à 10 millions de dollars, soit moins de la moitié de la somme dépensée en 1989. Les travaux de forage au diamant exécutés en 1990 (20 000 m) étaient aussi à la baisse, la moitié du total de 1989.

La majeure partie des travaux effectués au premier semestre de 1991 est attribuable à de grandes sociétés ou à des petites sociétés ayant reçu des fonds de grandes. Un certain nombre de grandes sociétés qui n'avaient pas exploré la province au cours des dernières années ont manifesté un regain d'intérêt.

En 1991, les cibles principales ont été des métaux communs dans des milieux géologiques reconnus depuis longtemps, particulièrement les bassins du Carbonifère inférieur. La recherche de gisements polymétalliques dans les couches précambriennes de l'Île du Cap-Breton s'est également intensifiée. L'exploration d'or dans la zone Meguma s'est atténuée considérablement cependant, trois cibles prometteuses ayant été mises de côté en attendant une injection de nouveaux fonds.

Le jalonnement de claims pour le premier semestre de 1991 s'établit à un niveau légèrement inférieur à la moyenne de 1990. Le nombre total de claims en vigueur en fin d'année devrait également diminuer par rapport à 1990.

Les travaux d'évaluation effectués au cours des six premiers mois de 1991 (traduisant les travaux exécutés dans les 12 mois précédents) ont totalisé environ 2 millions de dollars, contre 11,6 millions pour la même période en 1990.

Une prévision modifiée découlant de données fournies par Énergie, Mines et Ressources Canada révèle que les dépenses totales d'exploration pour 1991 seront probablement inférieures à celles de 1990, entre 5 et 8 millions de dollars.

TABLEAU

INDICATEURS DE L'EXPLORATION DE 1980 À 1990 MINISTÈRE DES MINES ET DE L'ÉNERGIE DE LA NOUVELLE-ÉCOSSE

Année	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
nouveaux claims	75 464*	52 018*	29 690	29 057	19 268	28 500	32 685	33 419	20 132	11 397	10 910
claims totaux et équivalents en effet	83 135	94 408	52 236	54 310	40 438	41 173	46 086	63 585	43 590	37 745	28 641
valeur des travaux d'évaluation reçus (en millions de dollars)	7,5	8,4	4,1	4,2	2,6	2,3	9,9	26,7	29,0	31,3	16,6
estimation des dépenses totales d'exploration	(10,0)	14,6	5,5	6,5	7,3	9,0	21,0	45,0	49,0	22,0	10,0
forage total (en milliers de mètres)		78,0	24,0	30	50,0	45	75	215	110	42	20,0

* approximation

4.4 Nouveau-Brunswick

L'industrie de l'exploration du Nouveau-Brunswick est dominée par six sociétés représentant les secteurs des grandes et des petites sociétés.

À la fin de 1990, on a signalé le plus grand nombre de claims en vigueur depuis 1955, même si le nombre de nouveaux claims inscrits a accusé une baisse sensible par rapport à l'année précédente. Les données préliminaires indiquent qu'environ 18 millions de dollars ont été consacrés à l'exploration au Nouveau-Brunswick en 1990.

Les répondants à une enquête menée par le gouvernement fédéral sur les prévisions de dépenses ont fait savoir qu'ils affecteront environ 21,7 millions de dollars au Nouveau-Brunswick en 1991. L'analyse des statistiques pertinentes disponibles fait ressortir qu'au cours des deux premiers trimestres de 1991, l'inscription et le renouvellement de claims, les visites aux bureaux et les demandes de renseignements par l'industrie sont à la hausse par rapport à la même période l'an dernier. Le nombre total de claims et d'équivalents atteignait 30 247 à la fin de juin, soit un peu plus qu'à la même période en 1990.

La majeure partie des travaux d'exploration seront axés sur les métaux communs. Cependant, les métaux précieux recevront également leur part des dépenses d'exploration. Tout laisse croire qu'en 1991 le secteur de l'exploration effectuera les levés géoscientifiques courants au sol, et des fonds seront également affectés à des programmes de creusage et de forage.

4.5 Québec

FINANCEMENT PAR ACTIONS ACCRÉDITIVES ET DÉPENSES D'EXPLORATION AU QUÉBEC EN 1990 ET 1991

Financement par actions accréditives

Au Québec, en 1990, le financement des dépenses d'exploration par actions accréditives a été sérieusement touché par le ralentissement économique et par l'abolition du Programme fédéral de stimulation de l'exploration minière au Canada. La prolongation de deux ans par le gouvernement du Québec des déductions additionnelles pour les dépenses d'exploration (allant jusqu'à 66 2/3% pour certains travaux de surface) ne semble pas en mesure de renverser, à elle seule, la

tendance défavorable prévalant depuis le krach boursier d'octobre 1987. Ainsi, pour 1990, le montant recueilli au moyen de ce mode de financement a été de l'ordre de 48 millions de dollars, plus faible que le niveau de 73 millions de dollars enregistré en 1989.

Pour 1991, le financement par les actions accréditives poursuit encore cette tendance à la baisse. En effet, les petites sociétés d'exploration n'ont réussi à réunir qu'un montant d'environ 4 millions de dollars au premier semestre. Avec la reprise économique escomptée, la situation pourrait s'améliorer d'ici la fin de l'année, mais le montant total prévu pour toute l'année ne dépassera sans doute pas la fourchette de 15 à 20 millions de dollars.

Afin d'aider les PME d'exploration les plus dynamiques à demeurer actives, le gouvernment du Québec a instauré en mai 1991 un programme d'aide financière avec contrepartie d'une durée d'un an, dont l'objectif est de permettre aux petites sociétés de poursuivre la mise en valeur de leurs propriétés minières. Doté d'une enveloppe budgétaire de cinq millions de dollars et administré par la Société québécoise d'exploration minière (Soquem), ce programme est destiné aux petites sociétés ayant leur siège social au Québec et qui ont effectué, depuis le 1er janvier 1988, au moins 300 000 $ de travaux d'exploration. De plus, les projets sélectionnés engagent des dépenses d'au moins 100 000 $ et ne doivent faire l'objet d'aucune subvention gouvernmentale.

Financement par actions accréditives et dépenses d'exploration au Québec (en millions de dollars)

	1988	1989	1990[4]	1991
Actions accréditives[1]	154	73	47	15-20[2]
Dépenses d'exploration[3]				
Hors chantier	331	164	153	141[5]
Au chantier	39	32	33	20[5]
TOTAL	370	196	186	161[5]

1. Ces montants comprennent les frais reliés au financement par les sociétés en commandite.
2. Prévisions.
3. Source : ministère de l'Énergie et des Ressources.
4. Données préliminaires.
5. Données prévisionnelles à partir de l'enquête effectuée à l'automne 1990, et confirmées par un sondage téléphonique réalisé en juillet 1991.

Dépenses d'exploration

L'enquête menée auprès des entreprises minières, relativement à leurs prévisions d'investissement, prévoit en 1991 une dépense totale de 161 millions de dollars, dont 141 millions pour l'exploration hors chantier et 20 millions pour l'exploration au chantier. C'est une baisse de 13.4 % par rapport à l'année précédente et plus de deux fois plus prononcée que celle enregistrée en 1990. Cette baisse découle essentiellement de la détérioration du financement par actions accréditives, principale source de financement des petites sociétés.

Toutefois, nous pouvons remarquer que depuis les trois dernières années, la baisse des dépenses globales d'exploration n'est pas aussi importante que celle enregistrée dans les recettes de financement par actions accréditives. C'est en partie grâce aux investissements des producteurs et de leurs filiales que la baisse n'est pas aussi prononcée. C'est aussi grâce aux efforts de recherche de minéraux industriels (graphite) et de métaux (chrome, nickel), en plus de l'exploration traditionnelle d'or.

Statistiques sur les claims et le forage au diamant

Le nombre de mètres forés par les entrepreneurs de forage au diamant et le nombre de claims enregistrés sont deux autres indices utiles pour suivre l'évolution des activités d'exploration. En 1990, le forage au diamant reste à peu près inchangé par rapport à 1989, soit de 1,30 millions de mètre. Pour les 5 premiers mois de 1991, ce nombre s'élève à 0,48 millions de mètres, comparativement à 0,63 millions de mètres pour la même période en 1990.

Quant aux claims enregistrés, le nombre total en 1990 est de 16 000 claims comparativement à 27 000 claims en 1989. Pour les 4 premiers mois de 1991, le nombre des claims enregistrés se chiffre à 6 405 claims, par rapport à 5 918 pour la même période en 1990.

4.6 Ontario

En 1989, les dépenses totales d'exploration minière et de mise en valeur ont atteint 560 millions de dollars en Ontario. Selon les estimations, elles seraient passées à 420 millions en 1990 et devraient chuter à 355 millions en 1991. En 1988, les dépenses totales d'exploration et de mise en valeur dans la province s'étaient chiffrées à 757 millions. Ces chiffres

comprennent les dépenses sur le terrain et les frais généraux.

Les dépenses d'exploration hors et au chantier (générales et à la mine) devraient passer de 218 millions en 1989 à 141 millions en 1990 et à 124 millions en 1991. Les dépenses de mise en valeur à la mine devraient, de leur côté, passer de 342 millions en 1989 à 279 millions en 1990 et à 232 millions en 1991. Ces chiffres comprennent les dépenses sur le terrain et les frais généraux.

Les grandes sociétés se sont partagées environ 72 % des dépenses d'exploration sur le terrain au et hors chantier totalisant 185 millions en 1989, contre 56 % en 1988. La part des dépenses des petites sociétés est donc passée de 44 % en 1988 à 28 % en 1989. Les pourcentages se rapportant aux grandes sociétés peuvent être surestimés étant donné que les fonds provenant des partenaires de coentreprises (surtout des petites sociétés) sont déclarés par les grandes sociétés.

Le nombre de claims en règle en Ontario à la fin d'avril 1991 s'établissait à environ 118 740, en baisse de 15 % par rapport aux 139 040 en avril 1990. Le nombre de claims en règle est considéré comme un bon indicateur du niveau d'exploration de l'année précédente. Il atteignait environ 125 000 à la fin de 1990, soit le niveau le plus bas depuis 1982. Le nombre de claims en règle a culminé à plus de 171 000 en 1988.

C'est dans le Nord-Est ontarien que les travaux d'exploration sont le plus intenses. Soixante pour cent des vingt-huit projets, souterrains ou à ciel ouvert, rendus à une étape avancée à la fin de 1990, se retrouvent dans le Nord-Est.

Environ 80 pour cent des projets d'exploration avancés concernent les propriétés d'or. En juillet 1991, cependant, plusieurs de ces projets étaient interrompus. Trois mines de métaux communs en sont à l'étape de la mise en valeur (il a été décidé de procéder à leur entrée en production) dans la région de Sudbury.

Les deux programmes ontariens d'encouragement, le Programme ontarien d'encouragement à l'exploration minière (POEEM) et le Programme d'aide aux prospecteurs de l'Ontario (PAPO), versent une aide financière aux personnes et sociétés qualifiées s'occupant de l'exploration et de la mise en valeur des mineraux en

Ontario. En avril 1990, le gouvernement ontarien a affecté 30 millions de dollars, sur trois ans, pour ces deux programmes. Ces fonds ainsi que certaines modifications apportées au POEEM ont pour but d'atténuer l'effet de l'abolition en février 1990 du Programme de stimulation de l'exploration minière au Canada du gouvernement fédéral.

Au cours de l'exercice 1990-1991, des subventions pouvant aller jusqu'à 10 000 $ ont été versées à plus de 400 prospecteurs aux termes du PAPO. L'aide financière accordée dans le cadre du POEEM prend la forme de subventions équivalant à 30 % des dépenses d'exploration admissibles et pouvant atteindre 300 000 $ par année. En 1990, 150 projets se sont vu accorder 8 millions de dollars.

En vertu d'une aide spéciale accordée dans le cadre du POEEM, jusqu'à 50 % des dépenses admissibles sont remboursées dans des régions désignées qui ont subi ou qui subiront probablement un repli économique. Ont droit à cette aide supplémentaire les régions de Kirkland Lake - Temiskaming, Eliott Lake, Manitouwadge, Atikokan et Beardmore - Geraldton - Longlac - Nanika.

4.7 Manitoba

Selon les estimations, les dépenses d'exploration devraient se situer en 1990 à 37 millions de dollars, par rapport à des dépenses estimatives de 38,5 millions en 1989 et de 40 millions en 1988. On estime que le forage au diamant de surface a atteint 197 000 mètres en 1990, 177 896 mètres en 1989 et 270 969 mètres en 1988. D'après les indications actuelles, les dépenses d'exploration de 1991 devraient être comparables à celles de 1990.

La superficie totale des claims inscrits au Manitoba en 1990 s'élevait à 130 105 hectares , contre 184 723 en 1989 et 341 722 en 1988. Cependant, l'aliénation des droits miniers (qui comprennent les claims, les permis et les baux) en règle à la fin de 1990 totalisait 2 291 049 hectares, comparativement à 1 865 317 et 1 614 463 à la fin de 1989 et 1988 respectivement.

La forte prédominance de l'exploration de l'or qui s'est fait sentir pendant la majeure partie des années 80 a fait place à la recherche de métaux communs dont les prix, contrairement à l'or, ont connu un raffermissement à la fin des années 80. Au Manitoba, cette situation se traduit par le fait que tous les

cinq projets avancés de mise en valeur concernent des gisements de métaux communs.

Les programmes d'exploration de cuivre et de zinc se sont concentrés dans la ceinture de roche verte de la région de Flin Flon - Snow Lake et, à un degré moindre, dans la région de Lynn Lake et le sud-est du Manitoba. La recherche du nickel s'est poursuivie le long de la ceinture de Thompson, particulièrement dans son prolongement sud sous la couverture paléozoïque. La recherche d'or a été axée vers les grandes ceintures de roche verte de Flin Flon-Snow Lake, Lynn Lake, Gods Lake, Island Lake et Rice Lake.

Dans son budget de 1991-1992, la province a annoncé la création du programme manitobain de stimulation de l'exploration minière. Ce programme cherche à intensifier les travaux d'exploration des petites sociétés. Seuls les investissements dans des entreprises financées aux termes d'une convention d'émission d'actions accréditives ou par une société en commandite se qualifieront. La province offre aux investisseurs une subvention de 25 % à l'égard des dépenses admissibles. La commercialisation sera effectuée par des sociétés inscrites de placements en exploration minière n'appartenant pas à la province. Le ministère de l'Énergie et des Mines étudiera les demandes d'inscription à compter du 1er janvier 1992. Les émissions admissibles d'actions accréditives seront limitées à 50 millions de dollars, et le coût total pour la province est évalué à 14,5 millions pendant la durée du programme. La loi habilitante, par l'intermédiaire du projet de loi 71, a été déposée à l'assemblée législative du Manitoba en juillet.

4.8 Saskatchewan

En Saskatchewan, les géologues résidents procèdent, au moyen d'entrevues téléphoniques à une enquête annuelle des dépenses d'exploration auprès des sociétés d'exploration minière et des groupes de prospecteurs. En janvier et février de chaque année, les sociétés et groupes sont priés de fournir une estimation de leur budget pour l'année en cours, réparti selon le produit de base recherché et la zone d'exploration. Depuis 1987, les sociétés doivent donner, en outre, leurs dépenses réelles de l'année précédente.

Bien qu'il y ait quelque 349 détenteurs inscrits de propriétés minières dans la province, entre 40 et 85 sociétés seulement (46 en 1991) financent des travaux d'exploration et forment le fondement de

l'enquête. Cependant, en raison de circonstances imprévues, les budgets peuvent varier considérablement au cours de l'année. Les dépenses réelles ont dépassé les estimations préliminaires en 1987 et 1988. Cette situation s'est renversée en 1989 et 1990, à la suite de la baisse d'intérêt envers les actions accréditives et de la chute des prix des métaux. Les dépenses d'exploration de 1986 à 1991, tirées de l'enquête des géologues résidents, figurent au tableau ci-dessous.

Le repli marqué des dépenses d'exploration minière en Saskatchewan depuis 1988 suit la tendance nationale. Au cours des dernières années, les petites sociétés ont éprouvé de plus en plus de difficultés à réunir des capitaux pour l'exploration et la mise en valeur. Il en découle que l'exploration a tendance à être davantage financée à même les fonds des grandes sociétés.

SASKATCHEWAN

Dépenses d'exploration - Enquête des géologues résidents (en millions de dollars canadiens)

	1986	1987 (int)	1987 (fin)	1988 (int)	1988 (fin)	1989 (int)	1989 (fin)	1990 (int)	1990 (int)	199
Métaux précieux	19	34	48	55	55	32	22	13	11	6
Métaux communs	2	2	3	3	6	5	7	7	7	6
Uranium	22	18	18	44(1)	40(1)	47(1)	46(1)	43(1)	37(1)	38
Autres	-	-	-	-	-	-	2	2	2	3
Total	43	54	69	102	101	84	77	65	57	53

int: intentions; fin: final

(1) comprend l'aménagement souterrain à Cigar Lake et les mines d'essais d'uranium à Midwest Lake.

La recherche de diamants se poursuit pour une troisième année. Quelque 80 sociétés et particuliers détiennent des claims dans le sud de la Saskatchewan, principalement dans la région s'étendant à l'est de Prince Albert. Les possibilités de découvertes rentables des gissements de diamants ne tiennent qu'à la spéculation à ce moment-ci, bien que le grand intérêt que suscitent les diamants et d'encourageants résultats d'exploration pourraient précipiter la découverte de tels gisements.

Dans l'ensemble, les dépenses d'exploration minière devraient continuer de chuter en Saskatchewan. L'estimation de 1991 est de 48 millions de dollars inférieure au sommet des 101 millions de dollars de dépenses d'exploration atteint en 1988, ce qui représente une chute de 47 pour cent.

4.9 Alberta

Les travaux de recherche de minéraux autres que le pétrole devraient ralentir légèrement en Alberta. Les dépenses devraient chuter à 7,1 millions de dollars, contre 7,6 millions de dollars (estimation) en 1990.

L'accent est encore mis sur l'exploration de charbon, le nombre de trous de forage d'exploration devant atteindre 876 en 1991, contre 723 en 1990 et 589 en 1989.

En 1990, plus des trois quarts des dépenses d'exploration autre que le pétrole ont été affectées au charbon. L'uranium s'est classé au deuxième rang, obtenant un peu moins de 20 % des dépenses totales. Le reste modeste des dépenses a été consacré à la recherche de métaux précieux, de non-métaux et de matériaux de construction. En 1990, d'importants droits miniers ont été accordés dans le nord-ouest de la province. Les permis d'exploration délivrés touchaient une superficie de 780 000 hectares. La valeur des travaux d'évaluation devrait atteindre environ 8 millions, dont 1 million a été dépensé en 1990.

La piètre performance de l'industrie minière aux prises avec une récession économique a rendu plus difficile dans l'ensemble le financement des travaux. Dans ce contexte, les caractéristiques uniques du financement par actions accréditives n'ont pas accru la capacité de l'industrie de réunir des capitaux. En 1990, les fonds réunis par actions accréditives ont continué à baisser, pour s'établir à environ 75 à 80 millions de dollars, contre environ 120 millions en 1989. Une faible partie de cette somme s'appliquait à l'exploration minière. En 1991, on s'attend à réunir environ la moitié des niveaux de 1990.

4.10 Colombie-Britannique

Le jalonnement de claims a connu une légère hausse par rapport à l'an dernier, passant de 97 328 en 1989 et 87 285 en 1988 à 98 256 en 1990. Même situation pour les travaux de forage au diamant: en effet, le nombre

de mètres forés s'est établi à 717 000 mètres en 1989 contre 683 000 en 1988. Les dépenses totales d'exploration, d'après les enquêtes préliminaires du gouvernement fédéral, sont estimées à 226 millions, en hausse de plus de 21 % par rapport au total définitif de 186 millions en 1989.

Les découvertes nouvelles ont été rares, étant donné que la majeure partie des travaux ont été axés aux environs de régions préférées telles la région de Sewart-Iskut River qui comprend Eskay Creek, et la zone nord de Quesnel qui comprend Mount Milligan.

La recherche de riches gisements en métaux précieux ou communs et la recherche de vastes gisements de métaux précieux ou communs à faible teneur, particulièrement de cuivre et or, ont dominé la scène. Les grandes sociétés se sont partagées une grande partie des dépenses de l'année, étant donné que les petites sociétés et les prospecteurs, les principaux découvreurs de mines de la province, ont dû ralentir leurs activités en raison de la fin du financement par actions accréditives. Le programme d'aide aux prospecteurs de la province a été réduit en 1991, ce qui pourrait ralentir encore davantage les travaux des prospecteurs en 1991 et dans les années subséquentes.

RÉPARTITION DES DÉPENSES D'EXPLORATION EN COLOMBIE-BRITANNIQUE SELON LE PRODUIT DE BASE

	1986	1987	1988	1989
	(en milliers de dollars)			
métaux précieux	36 793	15 126	161 992	116 166
métaux communs	8 623	114 952	22 633	27 610
fer	0	0	0	5
uranium	0	383	0	0
autres métaux	942	1 060	1 896	1 244
non-métaux	4 895	3 753	580	961
charbon	9 261	4 967	4 914	2 531
non précisé	2 626	2 311	4 756	1 215
Total	63 140	142 552	196 771	149 732

nota: L'exploration ne comprend pas le prolongement des gisements en cours d'extraction ou devant entrer en production. Travaux sur le terrain seulement, à l'exclusion des frais généraux.

La société Geddes Resources Ltd. a poursuivi l'exploration de son vaste gisement de cuivre et d'or Windy Craggy, dans le nord-ouest de la province, et a découvert une autre zone de cuivre.

Cominco Ltée et Redfern Resources Ltd. ont obtenu des résultats importants, dont une spectaculaire intersection de 50 mètres au gisement massif de sulfure Tulsequah Chief.

Cominco Ltée et Prime Resources Group Inc. ont entrepris l'exploitation du gisement d'or Snip, à un coût de 65 millions de dollars.

Corona Corporation et Prime Resources Group Inc. ont fait de grands progrès au riche gisement d'or, d'argent et de métaux communs Eskay Creek, interceptant en août une section spectaculaire de la zone 21B dans la rampe.

En novembre, Placer Dome Inc. a acquis le contrôle du vaste gisement de cuivre et d'or Mount Milligan, et après avoir poursuivi le forage, a procédé à une étude de faisabilité.

Imperial Metals Corporation et Corona Corporation ont achevé une étude favorable de faisabilité du gisement de cuivre et d'or Mt. Polley et ont conclu que le délai de récupération de ce projet de 131,5 millions serait de 3,6 années.

Curragh Resources Incorporated et Asturiana de Zinc (Espagne) proposent de mettre en valeur le gisement de plomb-zinc Stronsay (anciennement appelé Cirque) situé dans le nord-ouest de la Colombie-Britannique.

Crowsnest Resources Limited a continué d'examiner les possibilités d'exploiter une nouvelle mine de charbon thermique, d'une capacité de 800 000 tonnes par année, à Telkwa, près de Smithers (Colombie-Britannique); cependant, ce projet a encore été mis en veilleuse.

Les Charbons Fording, Limitée ont reçu une approbation en principe pour prolonger la fosse Henretta Dragline à la mine Elkford, dans le sud-est de la province.

Tous les grands projets, tels que Windy Craggy, Eskay Creek, Mt. Milligan et Stronsay, en sont à la première étape du processus d'étude de l'exploitation minière. Mount Polley en est à la deuxième étape du processus et devrait recevoir l'approbation en principe avant la fin de 1991.

4.11 Territoires du Nord-Ouest

En 1990, les Territoires du Nord-Ouest se sont classés au cinquième rang au chapitre de la production de minéraux métalliques au Canada, fournissant 5,9 % du total. Les expéditions de métaux ont été évaluées à 881 millions de dollars, en hausse de 9,1 % par rapport aux 805 millions enregistrés en 1988. Les données de 1989 révèlent que le secteur minier a assuré 36 % du produit territorial brut. En 1990, les Territoires du Nord-Ouest ont produit 24,7 % du zinc du Canada, 17 % de son plomb, 9,1 % de son or, 16,6 % de son cadmium et 2,1 % de son argent.

Environ 60 % des 2 200 emplois du secteur minier des Territoires du Nord-Ouest sont occupés par des résidents. La participation des autochtones du Nord est passée à environ 12 % des emplois, grâce aux efforts déployés par l'industrie et les collectivités. Le secteur minier a versé 123 millions ou 13 % de tous les salaires versés dans les Territoires du Nord-Ouest en 1989.

Les modifications apportées aux lois régissant les actions accréditives et le Programme de stimulation de l'exploration minière au Canada (PSEMC) ont atténué l'intérêt suscité par les placements dans le domaine de l'exploration. Ces changements, conjugués à la baisse des prix de l'or, à la force du dollar canadien et aux taux d'intérêt élevés, ont entraîné la chute des fonds disponibles pour l'exploration. Les dépenses d'exploration minière dans les Territoires du Nord-Ouest sont passées de 112 millions en 1988 à 55 millions en 1989 et à 38 millions en 1990. Le nombre total de claims en règle a diminué depuis le début des années 80. En 1990, les claims inscrits touchaient une superficie de 355 345 hectares, 563 548 hectares étant abandonnés. Les claims en règle couvraient 2 947 349 hectares, contre 4 256 528 hectares en 1980. La part des dépenses totales d'exploration effectuées dans les Territoires du Nord-Ouest en 1988, 1989 et 1990 est demeurée constante à environ 5,2 % du total canadien.

Parmi les projets d'exploration avancés, notons:

La coentreprise de George Lake - (Homestake Mining Company Ltd. et Kerr-McGee Corporation) a recherché de l'or à 525 kilomètres au nord-est de Yellowknife. Elle compte effectuer 24 000 autres mètres de forage au diamant en 1991.

BHP-Utah Mines Ltd. - a poursuivi ses travaux à la propriété d'or Ulu, située à 550 kilomètres au nord de Yellowknife. La société projette d'effectuer 15 000 mètres de forage au diamant en 1991.

Athabaska Gold Res. et Chevron Minerals Ltd. - ont défini 557 000 tonnes titrant 12,3 grammes la tonne d'or dans le gisement de Nicholas Lake, à 75 kilomètres au nord de Yellowknife.

En 1990, la NorthWest Gold Corp. a entrepris l'exploitation de la mine Colomac, vaste mine à ciel ouvert située à 200 kilomètres au nord de Yellowknife (la mine a interrompu temporairement ses activités en juillet 1991). La mine Giant de Yellowknife a été acquise par Royal Oak Resources. La Nerco Con Mines Ltd. a réhabilité un des puits et a augmenté la capacité de l'usine à sa mine Con Mine de Yellowknife. La société prévoit de construire un circuit en autoclave à côté du circuit existant, au coût de 19,4 millions. Le procédé d'oxydation sous pression permettra de récupérer l'or des déchets miniers existants et de traiter le minerai réfractaire. La mine Lupin, à 400 kilomètres de Yellowknife, a fait l'objet de construction d'infrastructures internes et de développement pour accéder aux réserves plus profondes. La mise en valeur de la propriété Kiggavik, à 100 kilomètres à l'ouest de Baker Lake, est interrompue en attendant l'achèvement de l'examen environnemental fédéral.

4.12 Yukon

En 1991, les dépenses d'exploration effectuées par les petites sociétés devraient demeurer très faibles. Cette situation peut être attribuable à la difficulté constante qu'éprouvent ces sociétés à réunir des capitaux de risque, en raison du faible cours des actions, des taux d'intérêt élevés, de la baisse du prix de l'or et de l'argent et de l'abolition de la déduction pour épuisement gagné et du Programme de stimulation de l'exploration minière au Canada.

Les grandes sociétés portent depuis un certain temps un intérêt croissant envers l'exploration des métaux communs, et les dépenses à ce chapitre devraient être égales ou légèrement supérieures à celles de l'an dernier. Curragh Resources Inc. devrait commencer à expédier des concentrés avant la fin de juillet 1991 à partir de son projet Mount Hundere.

Un sentiment d'incertitude règne actuellement dans l'industrie au sujet des modifications législatives et réglementaires proposées, plus particulièrement en rapport avec la revendication foncière des Indiens du Yukon. Cependant, les travaux de prospection des particuliers demeurent à un niveau élevé, et il ne semble pas évident qu'une petite ou grande société quelconque ait modifié ses projets d'exploration à cause de cette incertitude.

Une enquête effectuée par le MAINC à la fin de 1990 a révélé que les dépenses réelles au Yukon en 1990 ne se chiffraient qu'à environ 11 millions de dollars. Une autre enquête réalisée par la Chambre des mines du Yukon en août 1991 a fait ressortir que les dépenses en 1991 pourraient être légèrement supérieures, soit 14 à 15 millions de dollars. Ces chiffres sont beaucoup plus bas que l'estimation préliminaire de 1990 et la prévision pour 1991 figurant au tableau 3a, ce qui laisse supposer que les dépenses réelles ont baissé considérablement sous le niveau signalé dans l'enquête sur les intentions.

PARTIE C. ANALYSE RÉTROSPECTIVE DES TRAVAUX D'EXPLORATION MINIÈRE AU COURS DES DERNIÈRES ANNÉES

5.1 Introduction

La présente partie brosse un tableau de diverses facettes de l'exploration minière au cours des dernières années. Elle donne également la répartition des dépenses d'exploration par région, par produit de base et par catégorie de société. Les niveaux des travaux d'exploration de 1990 et 1991 sont décrits respectivement de façon préliminaire et prévisionnelle. Les données s'appliquant à ces deux années ont été recueillies entre décembre 1990 et mars 1991.

5.2 Dépenses d'exploration par région

Les tableaux 3a, 3b et 4 sont tirés de l'enquête fédérale-provinciale sur les sociétés d'exploration et d'exploitation.

Le tableau 3a illustre, en dollars courants, les dépenses d'exploration minière au Canada par province entre 1985 et 1991. Le tableau 3b donne les mêmes résultats, mais en dollars de 1990. Les chiffres se rapportant aux «travaux sur le terrain» ne comprennent pas les frais généraux. Le tableau 4 montre la répartition relative en pourcentage de ces mêmes données.

Jusqu'en 1989, les régions les plus explorées ont été l'Ontario et le Québec, qui en 1988 se partageaient 58 pour cent des dépenses totales engagées au Canada. En 1988 et 1989, les dépenses en Ontario ont dépassé pour la première fois depuis 1977 celles du Québec. Les dépenses d'exploration en Colombie-Britannique, en pourcentage du total canadien, ont augmenté rapidement au cours de la deuxième moitié des années 80, et en 1989 elles se comparaient à celles engagées au Québec. En 1990 et 1991, les dépenses d'exploration en Colombie-Britannique devraient dépasser celles enregistrées au Québec et en Ontario pour la première fois depuis 1981. En fait, selon les indications, les dépenses en Ontario en 1990 auraient chuté de 35 % par rapport à 1989, laissant cette province au troisième rang. L'Ontario devrait conserver cette place en 1991. Les dépenses totales d'exploration au pays devraient chuter de 9 % en 1990 par rapport à 1989 et de 14 % en 1991.

Tableau 3a. Dépenses d'exploration minière au Canada, par province, 1985 à 1991 (en millions de dollars courants)

	1985	1986	1987	1988	1989	1990ep	1991p
Province	Travaux sur le terrain seulement	Travaux sur le terrain seulement	Travaux sur le terrain seulement	Travaux sur le terrain seulement	Exploration totale (1)	Exploration totale (1)	Exploration totale (1)
Terre-Neuve	11.9	12.3	27.7	37.7	36.2	21.6	16.8
Nouvelle-Écosse	7.8	17.2	41.6	46.7	21.4	8.7	9.2
Nouveau-Brunswick	12.1	10.8	9.1	13.8	13.6	18.5	21.7
Québec	135.2	241.4	415.5	328.2	185.0	175.7	150.7
Ontario	93.2	136.8	308.1	343.6	217.8	141.2	123.8
Manitoba	33.7	26.3	40.0	30.0	37.0	36.6	35.0
Saskatchewan	39.4	36.8	63.5	61.1	63.3	57.6	51.3
Alberta	14.7	3.0	2.5	4.3	6.2	7.6	7.1
Colombie-Britannique	73.0	63.1	142.6	196.8	186.6	226.3	166.8
Yukon	22.7	27.9	29.0	38.6	15.1	22.1	27.0
Territoires du Nord-Ouest	46.8	35.8	59.0	66.5	45.7	33.2	36.7
Total des travaux sur le terrain (sauf frais généraux)	490.5	611.4	1 138.6	1 167.3	703.5	nd	nd
Total de l'exploration(1) (y compris les frais généraux)	605.8	723.3	1 300.0	1 350.0	827.9	751.2	646.2

Sources: Enquête fédérale-provinciale des dépenses sur le terrain, de 1985 à 1989; l'estimation préliminaire de 1990 et la prévision pour 1991 sont tirées des enquêtes fédérales-provinciales coordonnées par Statistique Canada et EMR.

(1) Nota: l'"exploration totale" comprend les frais généraux connexes; pour les années 1985 à 1988, les totaux avec frais généraux ont été obtenus en multipliant les dépenses sur le terrain de l'enquête fédérale-provinciale par le rapport total/dépenses sur le terrain de Statistique Canada.

ep estimation préliminaire; p prévision; nd non disponible.

Les totaux peuvent ne pas être exacts en raison de l'arrondissement.

Tableau 3b. Dépenses d'exploration minière au Canada, par province, 1985 à 1991 (en millions de dollars de 1990)

	1985	1986	1987	1988	1989	1990ep	1991p
Province	Travaux sur le terrain seulement	Travaux sur le terrain seulement	Travaux sur le terrain seulement	Travaux sur le terrain seulement	Exploration totale (1)	Exploration totale (1)	Exploration totale (1)
Terre-Neuve	14.4	14.6	31.3	40.7	37.3	23.6	16.2
Nouvelle-Écosse	9.5	20.4	47.0	50.4	22.0	8.7	8.9
Nouveau-Brunswick	14.7	12.8	10.3	14.9	14.0	18.5	20.9
Québec	163.9	285.7	469.5	354.0	190.5	175.7	145.2
Ontario	113.0	161.9	348.1	370.7	224.3	141.2	119.3
Manitoba	40.8	31.1	45.2	32.4	38.1	36.6	33.7
Saskatchewan	47.8	43.6	71.8	65.9	65.2	57.6	49.4
Alberta	17.8	3.6	2.8	4.6	6.4	7.6	6.8
Colombie-Britannique	88.5	74.7	161.1	212.3	192.2	226.3	160.7
Yukon	27.5	33.0	32.8	41.6	15.6	22.1	26.0
Territoires du Nord-Ouest	56.7	42.4	66.7	71.7	47.1	33.2	35.4
Total des travaux sur le terrain (sauf frais généraux)	594.5	723.6	1 286.6	1 259.2	724.5	nd	nd
Total de l'exploration (y compris les frais généraux)	734.3	856.0	1 468.9	1 456.3	852.6	751.2	622.5

Sources: Enquête fédérale-provinciale des dépenses sur le terrain, de 1985 à 1989; l'estimation préliminaire de 1990 et la prévision pour 1991 sont tirées des enquêtes fédérales-provinciales coordonnées par Statistique Canada et EMR.

(1) Nota: l'"exploration totale" comprend les frais généraux connexes; pour les années 1985 à 1988, les totaux avec frais généraux ont été obtenus en multipliant les dépenses sur le terrain de l'enquête fédérale-provinciale par le rapport total/dépenses sur le terrain de Statistique Canada.

ep estimation préliminaire; p prévision; nd non disponible.

Les totaux peuvent ne pas être exacts en raison de l'arrondissement.

Tableau 4. Dépenses d'exploration minière au Canada, par province, 1985-1991

Province	1985	1986	1987	1988	1989	1990ep	1991p
	Travaux sur le terrain	Travaux sur le terrain	Travaux sur le terrain	Travaux sur le terrain	Total	Total	Total
	pourcentage						
Terre-Neuve	2.4	2.0	2.4	3.2	4.4	3.1	2.6
Nouvelle-Écosse	1.6	2.8	3.7	4.0	2.6	1.2	1.4
Nouveau-Brunswick	2.5	1.8	0.8	1.2	1.6	2.5	1.4
Québec	27.6	39.5	36.5	28.1	22.3	23.4	23.1
Ontario	19.0	22.4	27.1	29.4	26.3	18.8	19.2
Manitoba	6.9	4.3	3.5	2.6	4.5	4.9	5.4
Saskatchewan	8.0	6.0	5.6	5.2	7.6	7.7	7.9
Alberta	3.0	0.5	0.2	0.4	0.8	1.0	1.1
Colombie-Britannique	14.9	10.3	12.5	16.9	22.5	30.1	25.8
Yukon	4.6	4.6	2.5	3.3	1.8	2.9	4.2
Territoires du Nord-Ouest	9.5	5.9	5.2	5.7	5.5	4.4	5.7
Total pays	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Enquête fédérale-provinciale des dépenses sur le terrain, de 1985 à 1989; l'estimation préliminaire de 1990 et la prévision pour 1991 sont tirées des enquêtes fédérales-provinciales coordonnées par Statistique Canada et EMR.

ep estimation préliminaire; p prévision.

Nota: De 1985 à 1988, les pourcentages sont calculés d'après les travaux sur le terrain seulement; pour 1989, 1990 et 1991, ils le sont d'après les dépenses totales qui comprennent les frais généraux connexes.

En 1989, les dépenses d'exploration par rapport à 1988 étaient à la baisse dans toutes les provinces sauf le Manitoba, même si le déclin cette année-là en Alberta était insignifiant. En 1990, les totaux préliminaires laissent supposer que les dépenses ont connu une hausse par rapport à 1989 en Colombie-Britannique, au Yukon, en Alberta et au Nouveau-Brunswick et une baisse dans toutes les autres provinces, particulièrement en Nouvelle-Écosse, où les dépenses d'exploration en 1990 ont diminué de 60 % par rapport à 1989. Les intentions pour 1991 révèlent qu'une augmentation des dépenses devrait se faire sentir par rapport à 1990 au Yukon et dans les Territoires du Nord-Ouest, au Nouveau-Brunswick et en Nouvelle-Écosse.

5.3 Dépenses d'exploration par catégorie de société

La figure 8a illustre les dépenses d'exploration de 1985 à 1989 par catégorie de société. Ce genre de données n'est pas encore disponible pour 1990 et 1991; ces années n'y figurent donc pas. Les dépenses totales d'exploration (travaux sur le terrain et frais généraux) pour les années 1989, 1990 (préliminaire) et 1991 (intentions) sont montrées à la figure 8b. Les données sur les travaux sur le terrain et les frais généraux totaux ne sont pas disponibles pour les années 1985 à 1989; ces années sont donc exclues de la figure 8b.

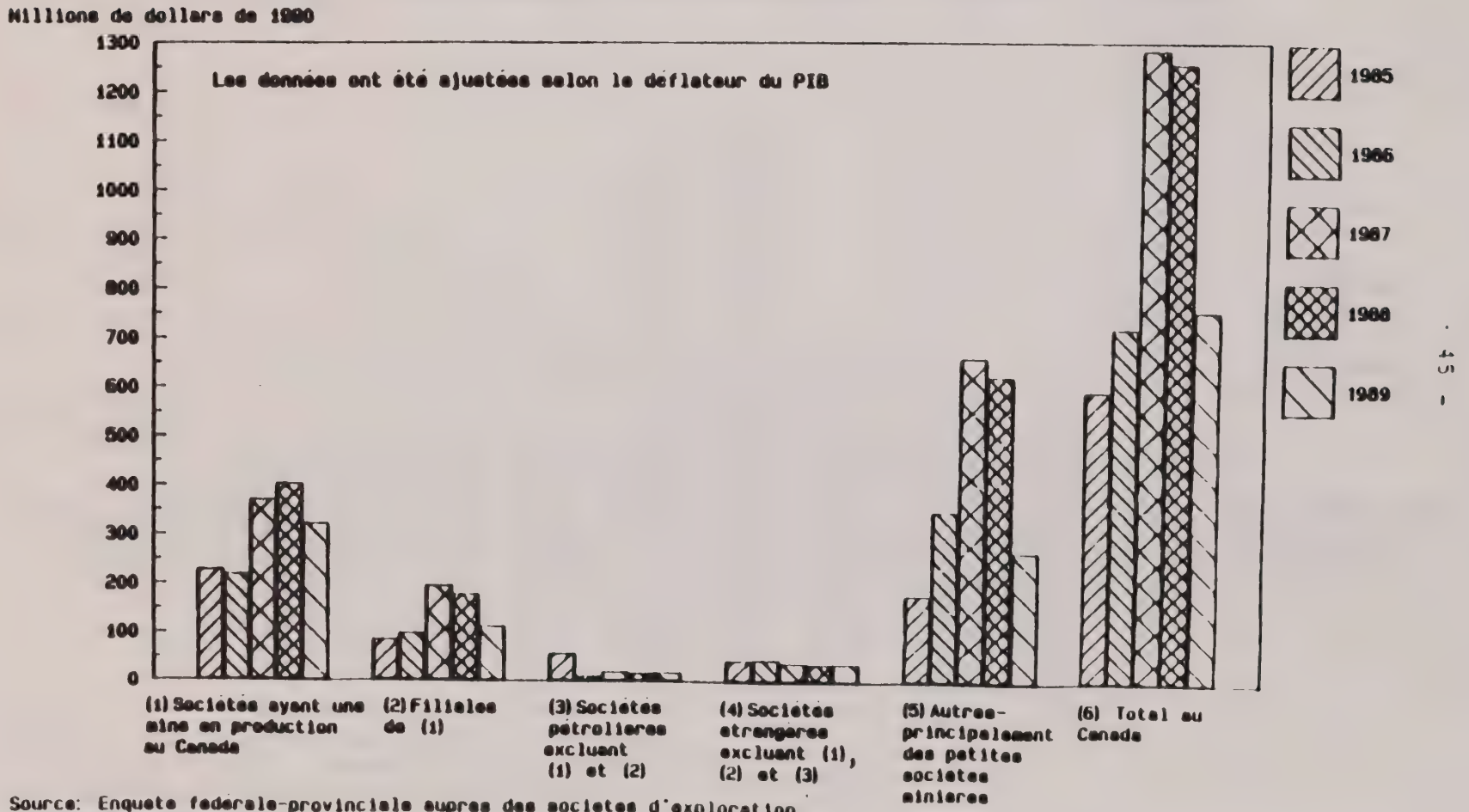
Entre 1985 et 1991, les travaux d'exploration de minéraux non pétrolifères par les sociétés pétrolières ont chuté, en dollars constants, de plus de 60 %, ceux des sociétés étrangères connaissant une baisse de plus de 70 %.

L'exploration par les sociétés productrices et leurs sociétés affiliées a culminé en 1987-1988 et semble avoir décliné de façon modérée depuis. Ce déclin peut en fait traduire la baisse des contributions des petites sociétés aux projets en coentreprise exploités par les grandes sociétés. Les dépenses de cette nature sont signalées dans leur totalité par les exploitants de projets (la plupart du temps des grandes sociétés).

La figure 9 montre les dépenses d'exploration en dollars courants pour la période allant de 1983 à 1991. La figure 10 illustre les dépenses d'exploration au Canada en dollars de 1990 entre 1969 et 1991. De 1983 à 1987, les dépenses d'exploration des petites sociétés ont presque décuplé, passant d'environ 71 millions de dollars en 1983 à près de 700 millions en 1987. Les dépenses des petites sociétés, qui en 1983 se partageaient environ 15 % des dépenses totales, sont passées à plus des deux tiers du total. En 1988, les dépenses des petites sociétés ont commencé à diminuer.

Figure 8a

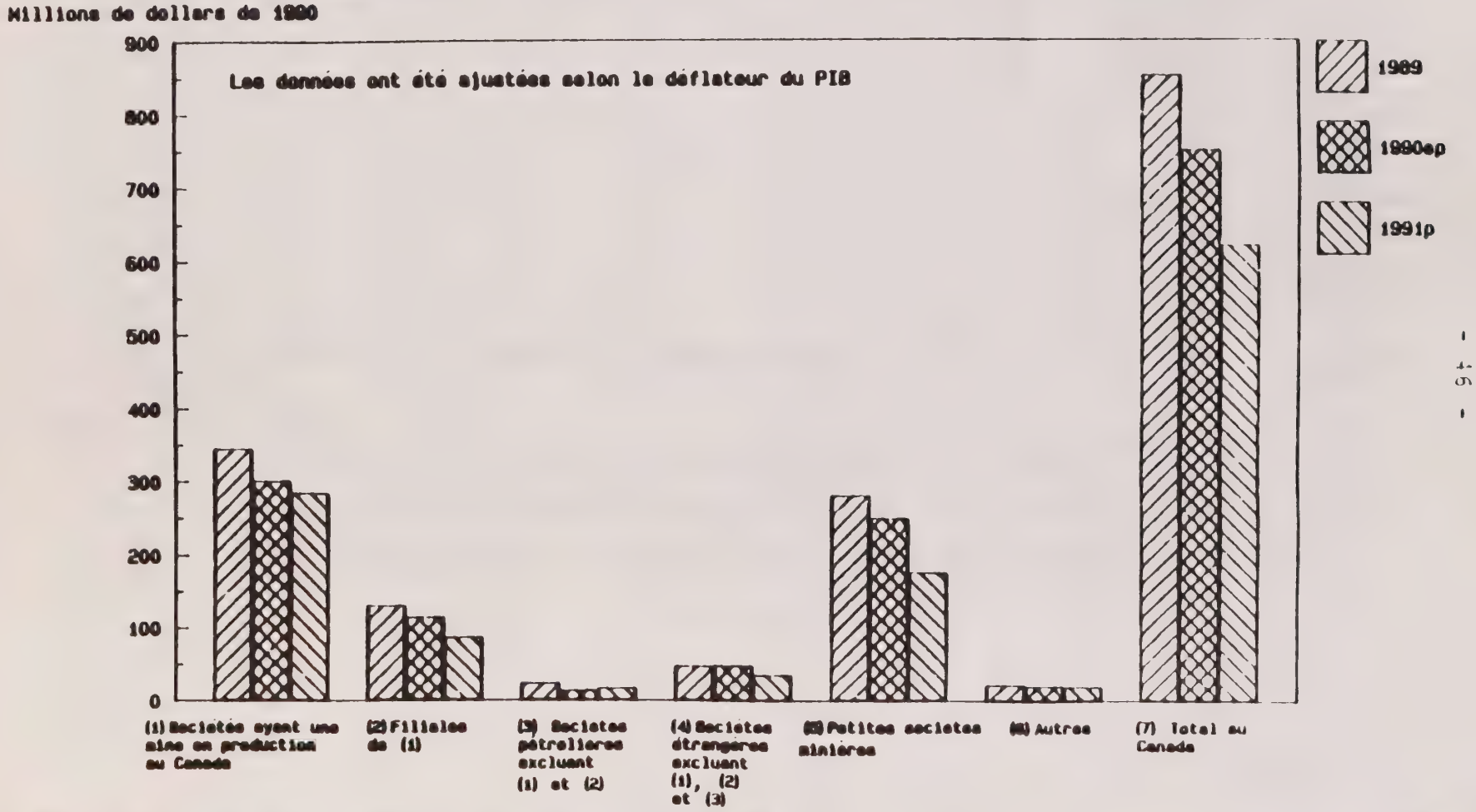
DÉPENSES D'EXPLORATION AU CANADA (TRAVAUX SUR LE TERRAIN SEULEMENT) PAR CATÉGORIE DE SOCIÉTÉ – 1985 À 1989



Source: Enquête fédérale-provinciale auprès des sociétés d'exploration et d'exploitation minière.
Note: Les dépenses ne comprennent pas les frais généraux.

Figure 8b

DÉPENSES D'EXPLORATION AU CANADA (TRAVAUX SUR LE TERRAIN PLUS FRAIS GÉNÉRAUX) PAR CATÉGORIE DE SOCIÉTÉ, 1989, ESTIMATION PRÉLIMINAIRE POUR 1990 ET PRÉVISION POUR 1991

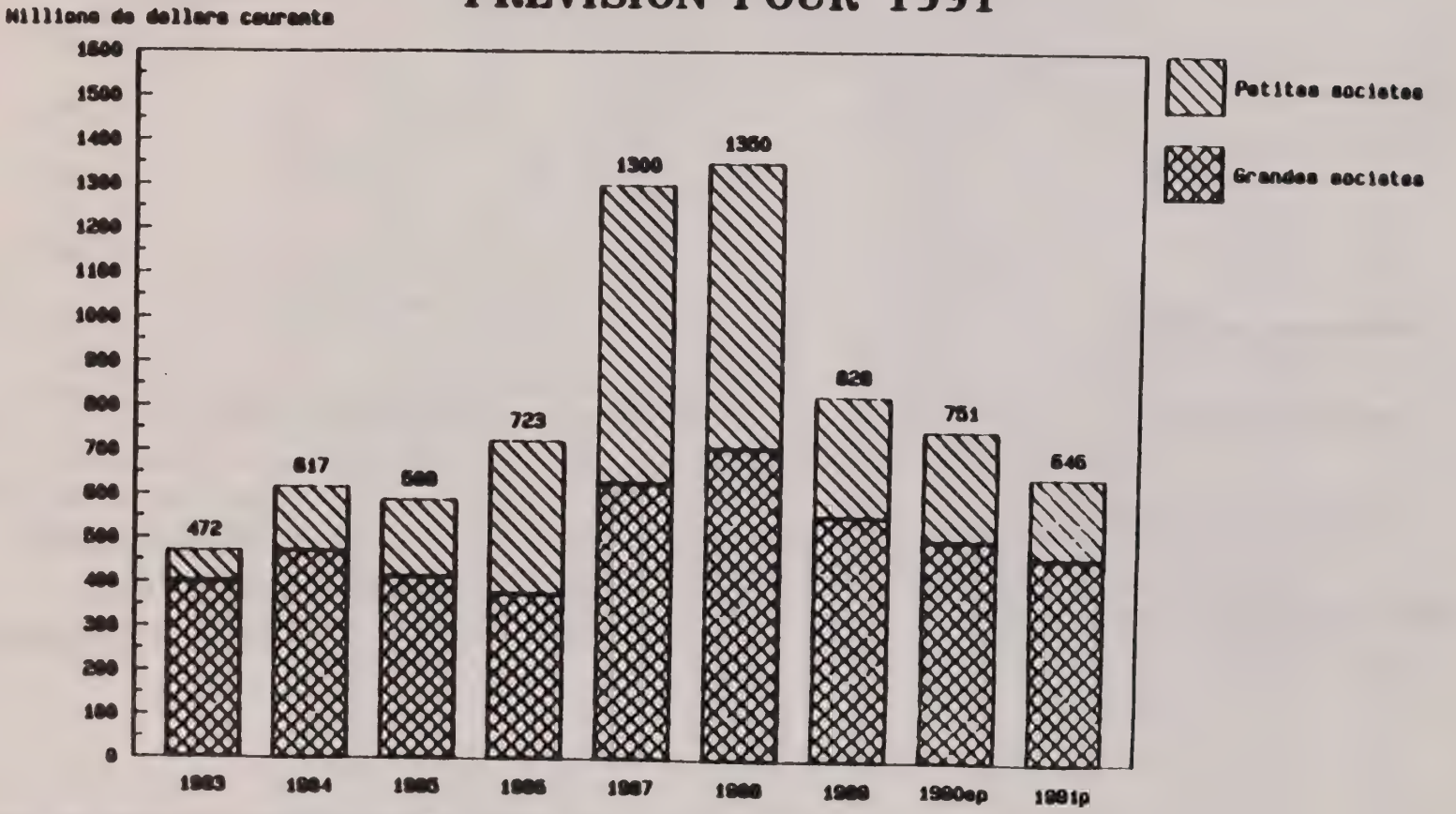


Source: Pour l'année 1989, l'enquête fédérale-provinciale auprès des sociétés d'exploration et d'exploitation minière.

Note: Les dépenses comprennant les frais gener

Figure 9

DÉPENSES TOTALES D'EXPLORATION DE 1983 À 1989 ESTIMATION PRÉLIMINAIRE POUR 1990 ET PRÉVISION POUR 1991

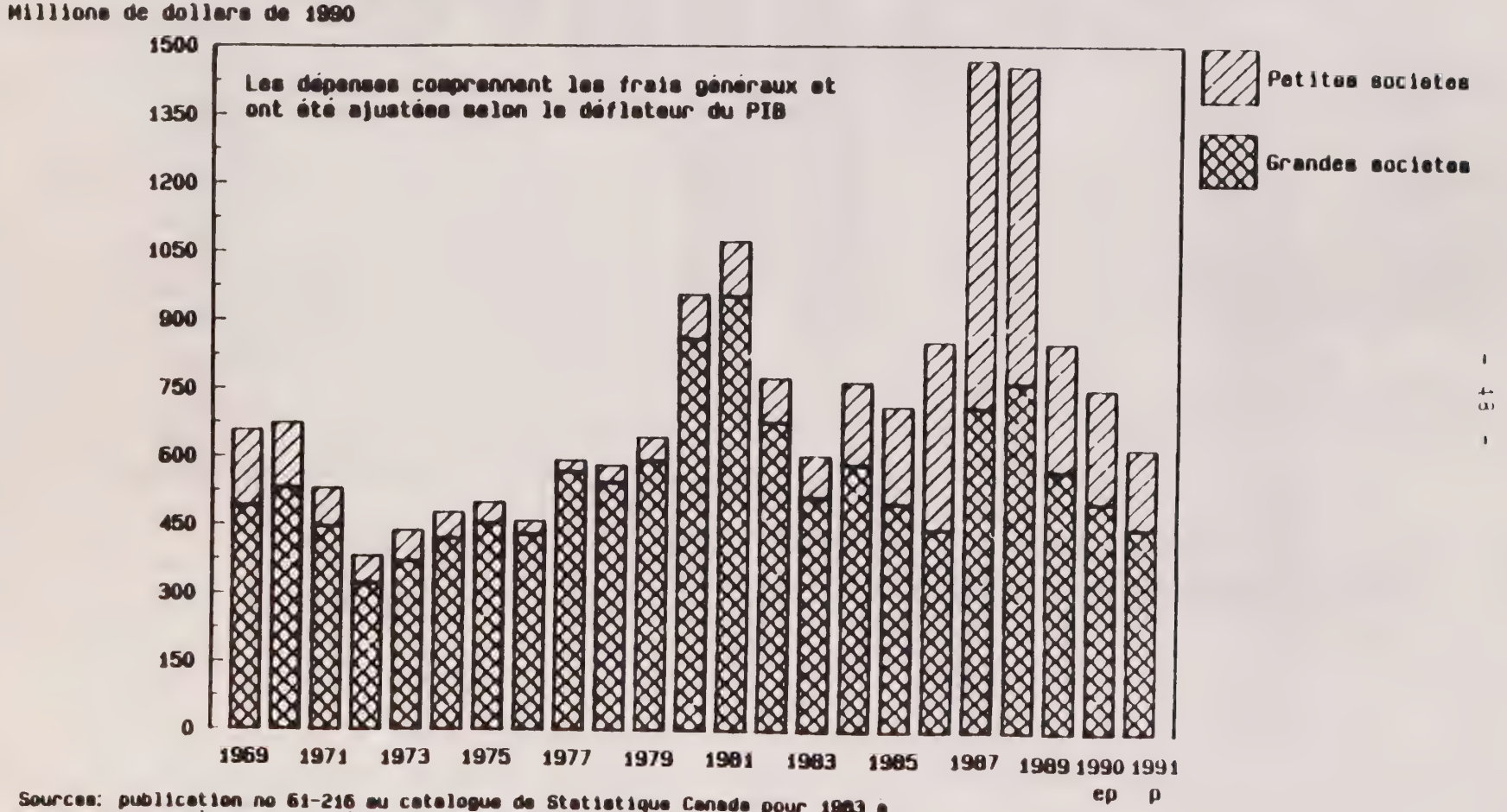


Sources: publication no 61-216 au catalogue de Statistique Canada pour 1983 à 1985; pour 1986 à 1988, les dépenses sur le terrain tirées de l'enquête fédérale-provinciale ont été multipliées par le rapport total/dépenses sur le terrain de Statistique Canada. L'estimation préliminaire de 1990 et la prévision pour 1991 proviennent des enquêtes fédérales-provinciales coordonnées par Statistique Canada et EMR.

ep estimation préliminaire; p prévision.

Figure 10

DÉPENSES TOTALES D'EXPLORATION DE 1969 À 1989, RÉPARTITION DES DÉPENSES ENTRE LES PETITES ET LES GRANDES SOCIÉTÉS; ESTIMATION PRÉLIMINAIRE POUR 1990 ET PRÉVISION POUR 1991



Sources: publication no 61-216 au catalogue de Statistique Canada pour 1983 à 1985; pour 1986 à 1988, les dépenses sur le terrain tirées de l'enquête fédérale provinciale ont été multipliées par le rapport total/dépenses sur le terrain de Statistique Canada. L'estimation préliminaire de 1990 et la prévision pour 1991 proviennent des enquêtes fédérales-provinciales coordonnées par Statistique Canada et ENR.

Cette tendance semble s'être poursuivie en 1989, 1990 et 1991.

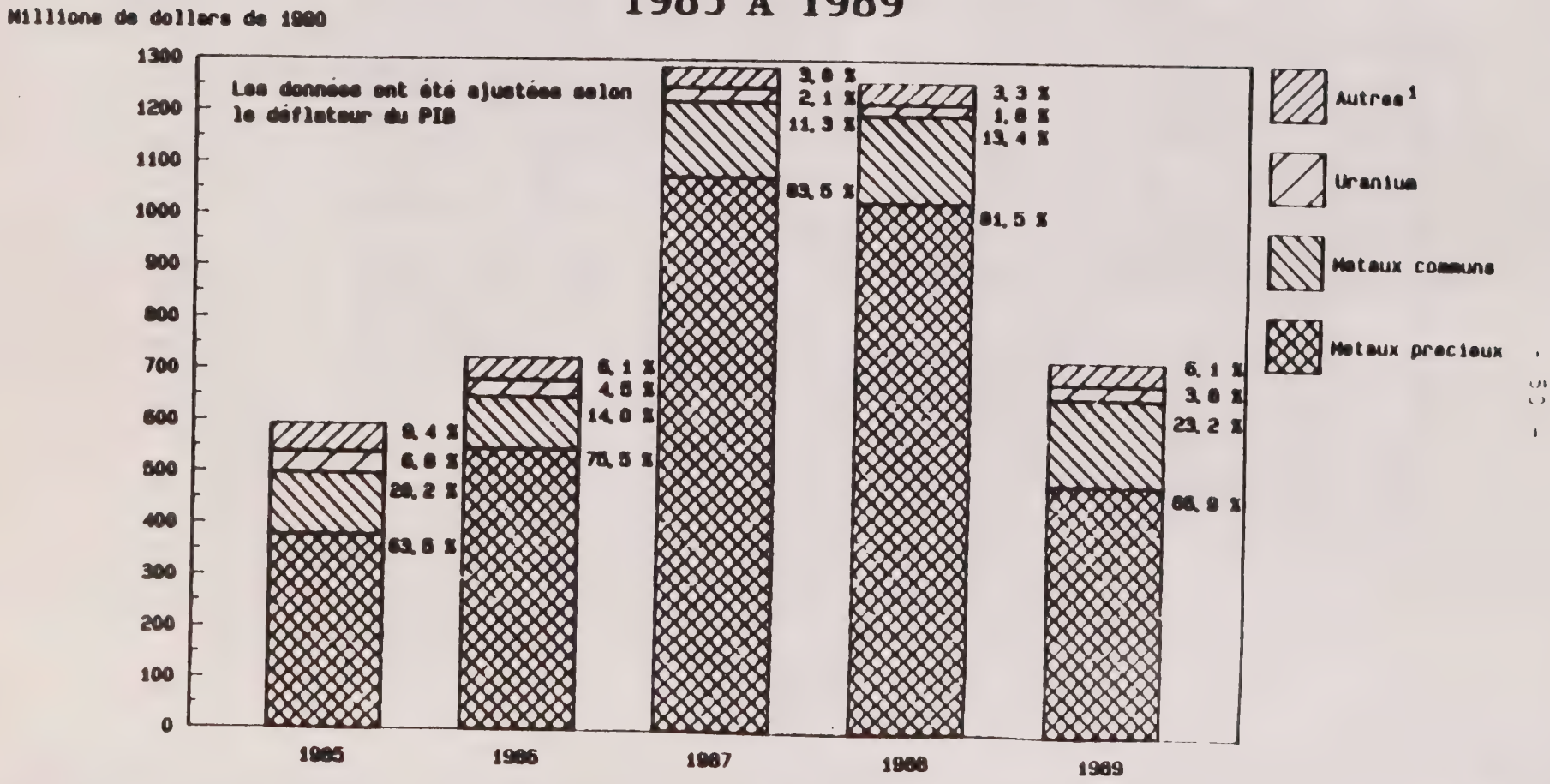
Le fait que les petites sociétés aient assuré environ les deux tiers des dépenses totales d'exploration au Canada en 1987 et 1988 ne ressort pas dans les histogrammes et peut s'expliquer de la façon suivante. À partir de 1984, les petites sociétés ont injecté des sommes considérables pour des projets d'exploration en coparticipation exploités par des grandes sociétés. Étant donné que les enquêtes demandent que les dépenses d'exploration engagées au Canada soient signalées par les exploitants de projet, et étant donné que les grandes sociétés n'ont pas en général versé de fortes sommes aux projets exploités par les petites sociétés, les enquêtes sur l'exploration ont eu tendance à surestimer la contribution des grandes sociétés et à sous-estimer celle des petites aux dépenses d'exploration au milieu des années 80.

5.4 Dépenses d'exploration par catégorie de produits de base

La figure 11 montre la répartition des dépenses totales d'exploration au Canada selon le produit ou groupe de produits recherchés et l'évolution de cette répartition entre 1985 et 1989. Elle illustre de plus la réorientation des dépenses selon le minéral recherché. En 1988, 82 % des dépenses au Canada étaient consacrées à la recherche de métaux précieux (l'or, selon les estimations, accaparant 95 % de ce chiffre), 13 % aux métaux communs, 2 % à l'uranium et 3 % aux autres métaux et minéraux, y compris le charbon. En 1989, la proportion des dépenses nationales consacrées aux métaux précieux a baissé considérablement et celle touchant la recherche de métaux communs a augmenté, métaux précieux, 67 % et métaux communs, 23 %. En dollars courants, les dépenses d'exploration des métaux précieux en 1989 ne représentaient que la moitié de celles de 1988, les sommes affectées à la recherche de métaux communs demeurant à peu près au même niveau. En pourcentage, l'uranium a représenté 4 % des dépenses totales en 1989, et les autres métaux et minéraux, y compris le charbon, 6 %.

Figure 11

DÉPENSES D'EXPLORATION AU CANADA
RÉPARTITION SELON LES PRODUITS DE BASE
1985 À 1989



Source: Enquete federale-provinciale aupres des societes d'exploration et d'exploitation miniere.

Note: Les depenses ne comprennent pas les frais generaux

[1] Autres comprend les metaux ferreux, les autres metaux non-metaux (y compris le charbon) et les "non precises"

PARTIE D. ANALYSE RÉTROSPECTIVE DU FINANCEMENT PAR ACTIONS ACCRÉDITIVES, 1983 À 1991

La figure 12 illustre l'évolution des actions accréditives comme source de financement de l'exploration. Les fonds réunis au moyen d'actions accréditives ont culminé à 1 183 millions de dollars en 1987.

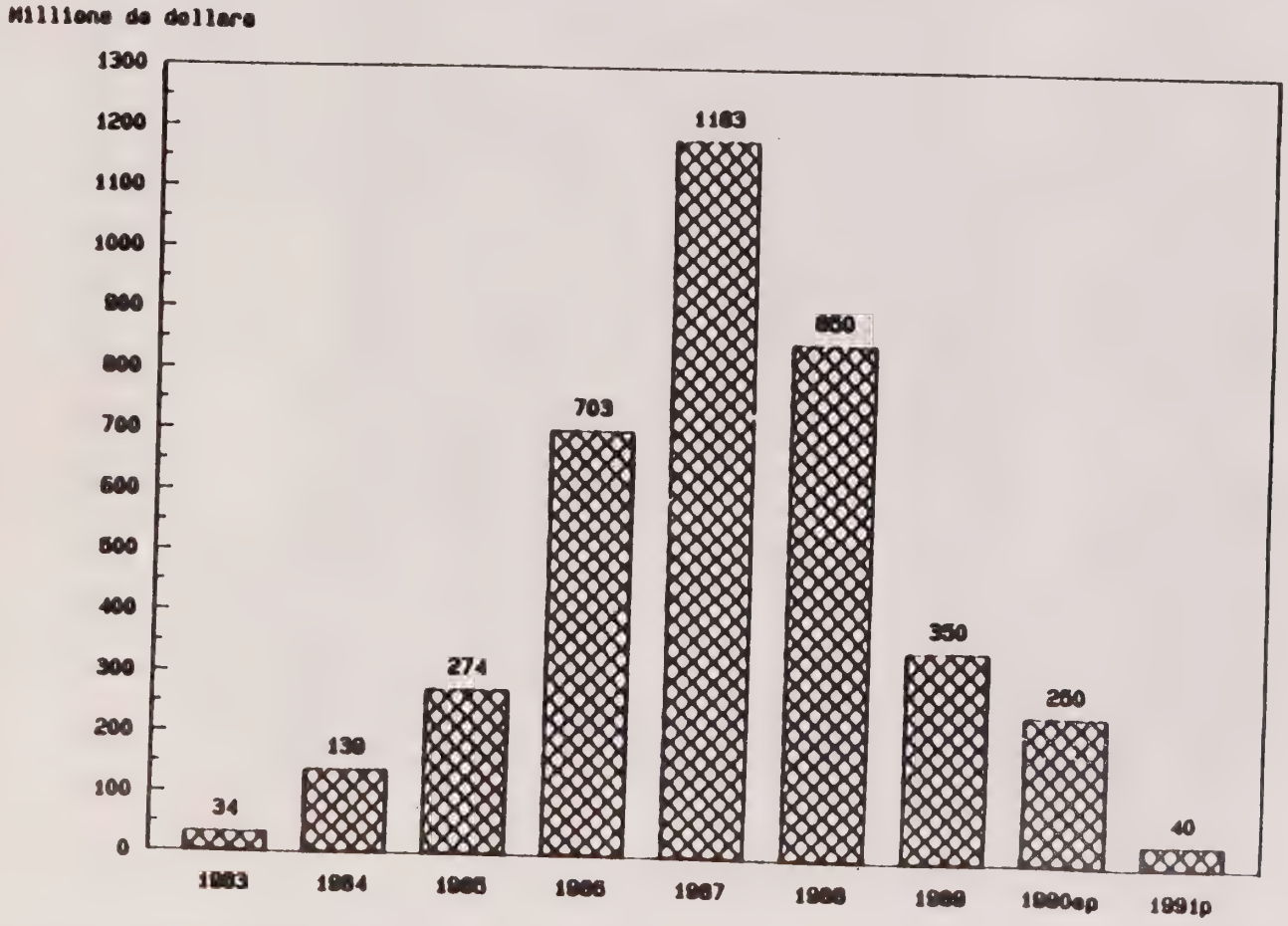
La proportion des dépenses d'exploration financées par actions accréditives est passée d'environ 7 % en 1983 à plus de 90 % en 1986 et 1987. Cependant, en 1988 cette proportion a chuté à environ 60 % des dépenses totales, en raison principalement de la participation plus faible des grandes sociétés sur le marché des actions accréditives. Cette tendance à la baisse s'est poursuivie en 1989 et 1990 et se poursuivra en 1991 (voir le tableau 5).

Cependant, il convient de souligner que les dépenses d'exploration et les fonds réunis par actions accréditives ne peuvent de façon réaliste être comparés directement. Les données sur l'exploration sont compilées selon l'année civile, les fonds accréditifs, eux, sont compilés selon l'année d'imposition. Depuis 1986, les données englobent les fonds réunis devant être utilisés en janvier et février de l'année suivante, soit la fameuse «règle des 60 jours». Par exemple, une certaine partie des fonds réunis en 1987 a été utilisée au début de 1988.

Parallèlement à cet accroissement du financement par actions accréditives, il s'est produit une hausse de la proportion des travaux d'exploration entrepris par les petites sociétés minières. Ce sont les petites sociétés qui ont eu le plus recours aux actions accréditives en 1987 et en 1988. En 1988, on estime que près de 80 % des fonds réunis par actions accréditives l'ont été par ces petites sociétés. Cependant, comme nous le soulignions précédemment dans le rapport, même si elles sont, et de loin, à l'origine de la majeure partie des travaux d'exploration financés par actions accréditives, il n'en demeure pas moins que ce sont principalement elles qui ont le plus souffert du choc de la réduction des niveaux du financement accréditif depuis 1989.

Figure 12

NIVEAUX DU FINANCEMENT PAR ACTIONS ACCRÉDITIVES 1983 À 1991



Source: Energie, Mines et Ressources Canada.
ep estimation preliminaire; p prevision en date du 1er juillet 1991.

Tableau 5. Rapport entre le financement par actions accréditives et les dépenses totales d'exploration, 1983 à 1991

Année	Dépenses totales d'exploration (en millions de dollars)	Financement accréditif (en millions de dollars)	Financement accréditif par rapport aux dépenses totales d'exploration
1983	472	34	7 %
1984	617	139	23 %
1985	589	274	47 %
1986	698	703	100 %
1987	1 300	1 183	95 %
1988	1 350	850	63 %
1989	828	350	42 %
1990pr	750	250	33 %
1991pr	530-850	40	7 %

pr: préliminaire; p: prévision

À partir de 1986, une certaine partie des fonds accréditifs ont été effectivement dépensés en janvier et février de l'année suivante (la «règle des 60 jours»). Entre 1983 à 1990 inclusivement, les actions accréditives auront permis de réunir quelque 57 % des dépenses totales d'exploration autre que le pétrole au Canada.

Document: 830-399/013

48TH ANNUAL MINES MINISTERS' CONFERENCE

Brief for the 48th Mines Ministers' Conference

Canadian Geoscience Council

HALIFAX, Nova Scotia
September 22-24, 1991

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Canadian Exploration Geophysical Society
La Société canadienne des Géophysiciens d'Exploration

Canadian Geophysical Union
L'Union canadienne de Géophysique

Canadian Geotechnical Society
La Société canadienne de Géotechnique

Canadian Institute of Mining and Metallurgy
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Canadian Quaternary Association
L'Association canadienne pour l'étude du Quaternaire

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L'Association internationale des Hydrogéologues, Chapitre national canadien

Canadian Society of Exploration Geophysicists
La Société canadienne d'Exploration géophysique

Canadian Society of Petroleum Geologists
La Société canadienne de Géologues du Pétrole

Canadian Well Logging Society
L'Association canadienne des sondeurs de puits

Geological Association of Canada
L'Association géologique du Canada

Mineralogical Association of Canada
L'Association minéralogique du Canada

The Canadian Association of Geographers
L'Association canadienne des Géographes

MISSION STATEMENT

The Canadian Geoscience Council provides an open forum for communication, discussion and debate to ensure the effectiveness and influence of the geosciences in addressing the needs and desires of the people of Canada, especially with regard to the quality of life, economic prosperity and the maintenance and improvement of the natural environment.

The Canadian Geoscience Council:

advises the general public on matters of significance to Canada and to the world that involve geoscience and geoscientists, in particular,
- by identifying national interests and concerns that need constructive advice from geoscience,
- by disseminating geoscientific information and advice on national and regional issues and concerns,
- by acting as a catalyst to increase appropriate endeavours by the national scientific and technical societies and associations;

provides expert advice to governments at the federal and provincial level,
- by commenting on legislation and programs that affect the earth and environmental sciences,
- by advising on legislation to licence professional geoscientists and to accredit programs of qualification,
- on request, by appointing and monitoring teams of experts to assess government programs;

promotes scientific awareness and education in Canada and encourages talented young Canadians to consider careers in the earth sciences;

organizes Canadian participation in nongovernmental global cooperative programs in the earth sciences;

provides an accountability and reporting centre for major cooperative geoscience projects in Canada and for Canadian contributions to similar international projects.

The Canadian Geoscience Council is a focal point for coordination and communication of the earth sciences in Canada and for Canadian participation in international geoscientific cooperation. The Council serves the national and regional interests of all Canadians and serves the specialized disciplines of earth science practised by some 16,000 scientists in Canada. The Council represents these scientists by means of its membership of delegates from the national scientific and technical societies in the earth sciences, scientists from industry, from the universities and from government agencies concerned with the geoscience of the natural environment of Canada and of its mineral, energy and water resources.

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Canadian Geoscience Council
Conseil Géoscientifique Canadien

FORTY-EIGHTH MINES MINISTERS' CONFERENCE

Halifax, Nova Scotia, September 22-25, 1991

Brief submitted by the Canadian Geoscience Council

The Canadian Geoscience Council represents the scientific and technical societies in the earth sciences and is a focal point for coordination and communication of the geosciences in Canada. Through its member societies, the Council represents about 16,000 scientists of diverse disciplines and thus has an abundance of expertise available. The Canadian Geoscience Council values highly its traditional cooperative relationships with Mines and Energy Ministers across Canada and welcomes opportunities to provide informed advice on earth science topics. The present brief comments on several of the specific subjects and issues scheduled for discussion at the Conference.

Mining and the Environment. Balanced and effective policy on land use requires consideration of alternative uses and of coordinated multiple uses for specific areas. A fundamental need for such consideration is the ready availability of comprehensive geoscientific mapping of the land surface, of the subsurface, and of the groundwater regime at scales appropriate for the specific areas. Such information is vital to assessment of the potential mineral wealth and also to the engineering requirements and the needs for construction materials for other land uses. Assessments of the patterns of movement of groundwater are of particular importance for all aspects of waste disposal, including planning for disposal of tailings and effluents from possible mining developments. Provision of such geoscientific maps is a responsibility of provincial, territorial and federal governments with schedules developed for long term programs. For considerations of land use for specific areas, appropriate advance notice is important to allow for appraisal and upgrading of existing geoscientific maps and data and for the commissioning of additional geoscientific mapping that may be required.

Human Resources and the Mineral Industry. Mining geologists, exploration geochemists and geophysicists, hydrologists and other specializations within the earth sciences all contribute to the effective performance of the mineral industry and to its creation of wealth that helps to provide for the varied needs of society. The technical societies in the earth sciences play important roles in the continuing education of geoscientists in the mining industries by the provision of technical lectures, intense short-courses, specially focused symposia and on-site field excursions. All of these maintain and increase the expertise vital to successful exploration and production.

Employment of professionals within the mineral industry and as related consultants has strong cyclical patterns. These patterns feed similar cyclical patterns of university enrolment in relevant areas of geoscience. Enrolments have fallen dramatically in recent years and the Canadian Geoscience Council has concerns for the future supply of geoscientists, including

...../2

those with skills related to the needs of the mineral industry. A parallel and international concern is the reticence of students to enter engineering and scientific fields of study. Global shortfalls in supply can be expected so that a country cannot plan to solve its supply problems by selective immigration of people with the required skills. To help to counter some of these problems, the Canadian Geoscience Council is participating in programs of public awareness of science, in programs to enhance the quality of the teaching of earth science concepts in Canadian schools, and recently has issued a completely new edition of its career guide with the title "Explore Careers in Geoscience".

Challenges in Mineral Exploration. Sustainable development of Canada's mineral resources and the global competitiveness of Canada's mineral industry require continuing exploration for new deposits and the development of new mines as reserves are being depleted. Exploration is becoming more and more sophisticated, as are the necessary levels of geoscientific expertise. Scientific modelling of the processes leading to concentrations of minerals requires detailed knowledge of the geological framework and of the physical and chemical conditions at the times of emplacement. Multidisciplinary geoscientific projects provide such knowledge and aid the effectiveness of mineral exploration. A current example is LITHOPROBE, providing new seismic information and interpretations for lines totalling 1000km annually along selected corridors in Canada, many of which traverse areas with mineral deposit potential. Another is the Ocean-Drilling Program which has just drilled an exploratory hole in deep water in the black-smoker region west of Vancouver Island to gain information concerning the mode of formation of sulphide deposits that are being generated today.

Public Perception of the Mineral Industry. The present widespread ignorance and misconceptions concerning the mineral industry reflect the general public's alienation from science. Earth science phenomena too often are publicised as disasters: earthquakes, volcanic eruptions, landslides, floods, tidal waves and the like. Mineral deposits are beneficial products of earth science processes and provide wealth to society, increasing the standards and pleasures of living. The Canadian Geoscience Council joins with other bodies of responsible scientists to encourage and improve public awareness of science. The general objectives are to encourage the public to have some understanding of the processes of science and to value the immense contributions that science makes to society.

Brian Norford, President

Attachment-CGC Mission Statement

Document: 830-399/013

48E CONFÉRENCE ANNUELLE DES MINISTRES DES MINES

Condensé soumis pour la
48e Conférence des ministres des Mines

Conseil géoscientifique canadien

HALIFAX (Nouvelle-Écosse)
Du 22 au 24 septembre 1991

VEUILLEZ NOTER

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48e CONFÉRENCE DES MINISTRES DES MINES

Halifax, Nouvelle Écosse, 22-25 septembre 1991

Condensé soumis pur le Conseil Géoscientifique Canadien

Le Conseil Géoscientifique Canadien représente les associations scientifiques et techniques dans le domaine des sciences de la Terre et est un point central pour la coordination et les communications des géosciences au Canada. Au travers de ses sociétaires, le Conseil représente environ 16 000 scientifiques de diverses disciplines fournissant ainsi une expertise abondante. Le Conseil Géoscientifique Canadien attache beaucoup d'importance à ses relations traditionnelles de coopération avec les différents Ministères des mines, de l'énergie et des ressources à travers le Canada et est ainsi heureux de profiter de toutes les occasions possibles pour fournir des conseils avertis sur des sujets touchant les sciences de la Terre. Le présent communiqué présente brièvement plusieurs des sujets qui seront discutés lors de la Conférence.

Les mines et l'environnement Une politique efficace et équilibrée de l'utilisation des terrains d'un secteur précis requiert que l'on prenne en considération ses vocations possibles qu'elles soient opposées ou multiples. De telles considérations exigent la disponibilité d'une cartographie géoscientifique adéquate de la surface, du sous-sol ainsi que de l'écoulement de l'eau souterraine et cela à des échelles appropriées. Ces documents sont essentiels pour évaluer le potentiel d'un terrain minier, la planification des travaux d'ingénierie ainsi que la prévision des besoins en matériaux de construction pour d'autres usages. La connaissance des réseaux d'écoulement de l'eau souterraine est particulièrement cruciale pour tous les aspects liés à la gestion environnementale des déchets miniers ou des effluents d'une exploitation minière éventuelle. L'approvisionnement en cartes géoscientifiques, produites suivant une planification à long terme, est de la responsabilité des gouvernements provinciaux, fédéraux et territoriaux. Pour une région spécifique, il est important d'allouer des délais suffisants pour permettre la mise à jour des données et cartes existantes et pour faire exécuter de nouveaux travaux s'il y a lieu.

Les ressources humaines et l'industrie minérale. Géologues miniers, géochimistes et géophysiciens d'exploration, hydrogéologues et autres spécialistes dans le domaine des sciences de la Terre ; tous contribuent à la performance de l'industrie minérale et à sa prospérité qui aide à subvenir aux différents besoins de la société. Les sociétés et institutions techniques dans le domaine des sciences de la Terre jouent un rôle important dans la formation continue des géoscientifiques de l'industrie minérale en présentant des conférences techniques, des cours intensifs, des colloques sur des sujets spécifiques ainsi que [illegible] l'expertise essentielle au succès des programmes d'exploration et d'exploitation.

Le taux d'engagement des professionnels à l'intérieur de l'industrie minérale et parmi les consultants est sujet à des cycles importants. Ces changements cycliques se répercutent sur le nombre d'inscriptions universitaires dans les disciplines géoscientifiques. Pour la plupart des universités, le nombre des inscriptions a diminué dramatiquement au cours des dernières années et le Conseil considère la situation de la relève géoscientifique

comme inquiétante, incluant les spécialistes dans les domaines reliés à l'industrie minérale. Parallèlement, et à un niveau international, la réticence des étudiants à choisir les domaines du génie et des sciences se fait sentir. Il est prévisible que la pénurie en personnel qualifié sera généralisée; les pays ne pourront donc pas recourir à l'immigration sélective pour combler de tels besoins. Pour tenter de résoudre certains de ces problèmes, le Conseil Géoscientifique Canadien participe à des programmes de sensibilisation du public à la science, à des programmes pour rehausser la qualité de l'enseignement des sciences de la Terre dans les écoles canadiennes et a récemment fait paraître une nouvelle édition de son guide des carrières avec le titre "Une carrière en sciences de la Terre".

Les défits de l'exploration minière. Le développement soutenu des ressources minières du Canada et le caractère compétitif de l'industrie minérale du Canada exigent de continuer des programmes d'exploration pour de nouveaux dépôts et pour le développement de nouvelles mines à mesure que les réserves diminuent. Les techniques d'exploration sont de plus en plus sophistiquées tout comme le sont les diverses facettes des géosciences. La modélisation des processus de concentration de minéraux exige une connaissance détaillée des contextes géologiques et des conditions physiques et chimiques lors de leur formation. Les projets multidisciplinaires géoscientifiques fournissent ces connaissances et aident à l'efficacité des programmes d'exploration. LITHOPROBE est un exemple d'actualité. Il fournit de nouvelles informations et interprétations sismiques le long de traverses totalisant 1000 km par année et cela dans des corridors choisis au Canada et dont plusieurs traversent des zones potentielles de dépôts minérals. Un autre exemple est le Programme de Forages Océaniques qui a récemment réalisé un forage d'exploration en eau profonde dans la région de "black-smoker" à l'ouest de l'Île de Vancouver pour obtenir des données uniques sur la genèse des dépôts de sulfures actuellement en formation.

La perception de l'industrie minérale par le public. L'ignorance généralisée et les fausses idées concernant l'industrie minérale reflètent l'éloignement général du public face aux sciences. On parle beaucoup des phénomènes naturels associés aux sciences de la Terre lors des désastres : tremblements de Terre, éruptions volcaniques, glissements de terrain, inondations, raz-de-marée, etc. À l'opposés, les dépôts de minéraux, eux aussi résultats bénéfiques de divers processus géologiques, fournissent une bonne part des richesses de notre société tout en augmentant le niveau et la qualité de la vie. Le Conseil Géoscientifique Canadien s'est joint aux autres sociétés et associations scientifiques pour encourager et améliorer la conscience du public face aux sciences. Les objectifs généraux sont d'encourager le public à avoir une compréhension suffisante des processus scientifiques majeurs et à apprécier l'immense contribution des sciences à la société.

Brian Norford, Président

Suit l'énoncé de la mission du CGC